Meridian 1

Option 11C Mini

Planning and Installation Guide

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"Appendix A: General information for the United Kingdom" was removed from this guide. For UK-specific information, refer to the *Meridian 1 Guide for the UK (553-3001-110)*.

Also, "Appendix B: Additional information for installations in Germany" was removed from this guide. Refer to "Chapter 5 — Regulatory information" on page 83 for European regulatory information.

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About this guide

Who should read this guide

The *Option 11C Mini Planning and Installation Guide* is for persons responsible for planning and installing the Option 11C Mini system.

Use this guide as a reference tool for Option 11C Mini installations. The planning chapters describe the general design, features, limits, and site requirements of the Option 11C Mini system. The installation chapters provide complete installation instructions for installing a new Option 11C Mini system.

How this guide is organized

The *Option 11C Mini Planning and Installation Guide* includes 19 chapters and two appendixes. The first part of the guide (Chapters 1 through 5) contains information about planning for the installation of your Option 11C Mini system. The second part of the guide (Chapters 6 through 19) contains procedures for installing your Option 11C Mini system. The appendixes at the end of this guide provide information about preprogrammed data.

Terminology used in this guide

The *Option 11C Mini Planning and Installation Guide* is a global document. This guide contains some terms which are not common in the UK. The following is a list of these terms and their equivalent in the UK.

North American term	UK term or meaning
analog (500/2500-type) set	Analog rotary dial/MF4 telephone
Central Office (CO)	Local Public Exchange
cross-connect wire	Jumper wire
Direct Inward Dialing (DID)	Direct Dialing In (DDI)
E1	2.0 Mbit, 32 channel digital carrier (Megastream)
Grounding	Earthing
Set	Telephone
Station	Extension telephone
TIE trunks	Private circuits
Toll trunks	Exchange lines
T1	1.5 Mbit, 24 channel digital carrier (North American equivalent to Megastream)
WATS, FEX (FX1 and FX2), CSA	Alternative public vendor network services (used only in North America)

Related documents

Refer to the following documents for additional information:

- *Option 11C and 11C Mini Upgrade Procedures Guide (553-3021-250)*
- *Option 11C and 11C Mini Technical Reference Guide (553-3011-100)*
- *Option 11C and 11C Mini Fault Clearing Guide (553-3011-500)*
- *Option 11C Central Answering Position Guide (553-3011-320)*
- *Option 11C Customer Configuration Backup and Control Guide (553-3011-330)*
- *X11 Software Administration Guide (553-3001-311)* (International)
- *X11 Software Maintenance Guide (553-3001-511)* (International)
- *X11 Software Administration and Maintenance Guide (553-3001-400)* (North America)
- *X11 Software System Messages Guide (553-3001-411)*
- *1.5 Mbit DTI / PRI Guide (553-3011-310)*
- *2.0 Mbit DTI / PRI Guide (553-3011-315)*
- *ISDN BRI Administration and Maintenance Guide (553-3011-311)*
- *BIX In-Building Cross-Connect System Material Description (631-4511-100)*
- *BIX In-Building Cross-Connect System Material Installation and Servicing (631-4511-200)*
- *Intelligent Peripheral Equipment Circuit Card Supplements*
- *Meridian Administration Tools User Guides*
- *Meridian Mail Enhanced Card Option Installation and Maintenance Guide (555-7071-210)*
- *Meridian 1 Set-Based Administration Guide* (553-3001-303)
- *Meridian 1 Telephone and Attendant Console Installation* (553-3001-215)
- *Meridian 1 European Digital Telephones* (553-3001-114)

- *M3900 Series Meridian Digital Telephone Description, Installation, and Administration* (553-3001-216)
- *Meridian 1 Guide for the UK (553-3001-110)*

Chapter 1 — Introducing the Option 11C Mini

This chapter provides an overview of the Option 11C Mini system.

Option 11C Mini system description

The Option 11C Mini is a small communications system based on existing Option 11C technology. The system provides full Meridian 1 feature functionality. The Option 11C Mini uses X11 global software which other Meridian 1 systems also use.

In an Option 11C Mini system, the Main Chassis can connect to a Chassis Expander. This increases line size to 144 lines. Two copper cables connect the Chassis Expander to the Main Chassis.

The Main Chassis and Chassis Expander each provide four Intelligent Peripheral Equipment (IPE) card slots. These card slots support line cards, trunk cards, and application cards used in other Meridian 1 systems. The Option 11C Mini introduces a 48-port Digital Line Card (NTDK16). You must insert the 48-port Digital Line Card in a dedicated slot (Slot 4) of the Main Chassis. The Main Chassis also provides a dedicated slot (slot 0) for the Mini System Controller (MSC) card.

A processor located on the Mini System Controller (MSC) card in the Main Chassis handles call processing, serial ports, and network traffic. Call processing on the MSC card is equivalent to that on the Option 11C Small System Controller (SSC) card. Use the MSC card for configurations with up to 144 lines.

The power supply for the Option 11C Mini is installed in the chassis before it is sent to the customer site. You do not have to install the power supply during system installation.

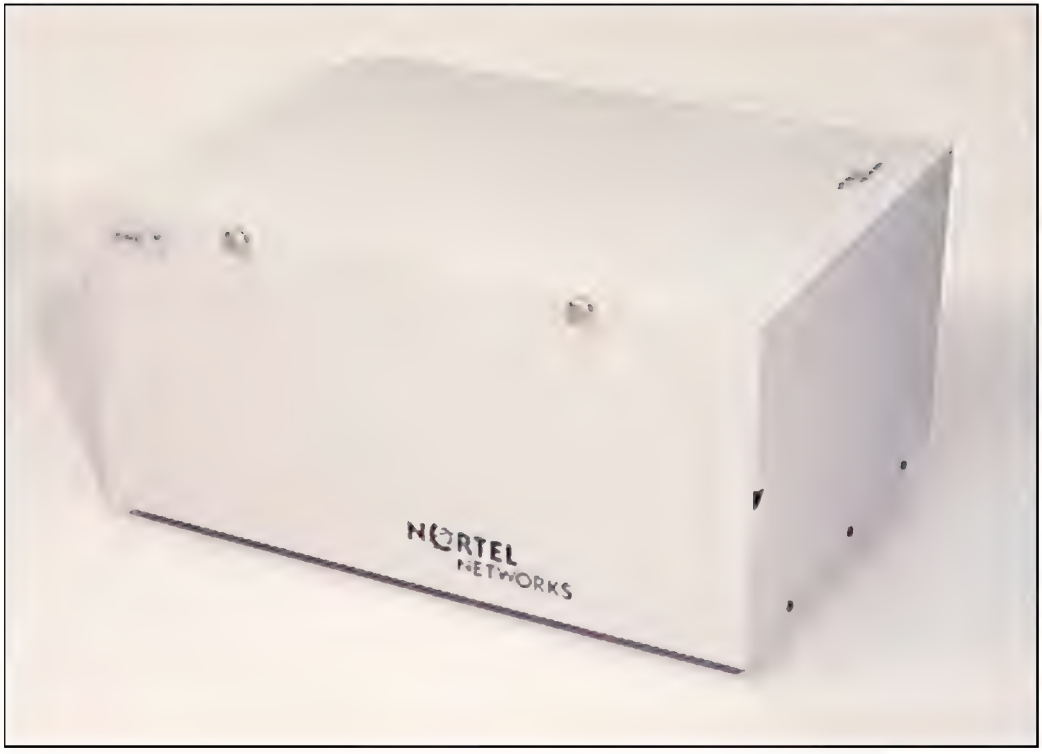
You can configure the Option 11C Mini as a non-blocking system. You do not have to provision the Option 11C Mini for speech paths or time slots.

The Option 11C Mini provides four chassis installation options. Install the Option 11C Mini chassis in the following positions:

- on a wall in a vertical position
- on a wall in a horizontal position
- in a 19 inch rack/cabinet
- on a table

Figure 1 shows the Option 11C Mini Main Chassis.

Figure 1
Option 11C Mini chassis



Installing software and configuring data

The Option 11C Mini supports a minimum of X11 Release 24.24 software. Everything from general business features to advanced applications are available. The software contains all of the components related to a release of software. These components include software patches, preconfigured customer database, feature sets, and other related databases and software.

When you perform an installation for the first time, use the MSC card for the installation. When you upgrade to a new software release, use a Software Delivery card (PCMCIA card).

Flash Drives

Two Flash Drives, located on the MSC card, perform Meridian software operation and customer data storage.

The first flash device is the Primary Flash Drive. The Primary Flash Drive contains Meridian system data and the first copy of customer data required to load and run the switch. The Primary Flash Drive is programmed with system software before it is shipped to the customer.

The second Flash Drive is the Backup Flash Drive. The Backup Flash Drive stores files that the user can change. Examples of these files are configuration data and the second copy of the customer database. If the Primary Flash Drive fails, you can retrieve a backup set of customer data. After the backup set of customer data is retrieved, you can load it into the system's active database.

Software Installation Program

The Software Installation Program starts during initial installations of the Option 11C Mini system. This program is menu driven.The Software Installation Program installs the software and puts the Option 11C Mini into operation.

Software Delivery Card

The Option 11C Mini uses a Software Delivery card (PCMCIA) card to upgrade system software and provide storage for a backup copy of customer data. The Option 11C Mini uses the same Software Delivery card that the Option 11C uses.

Insert the Software Delivery card in the socket (slot A) located on the faceplate of the MSC card. When inserted, you can load software and customer databases from the Software Delivery card to the MSC card.

Security Device

A Security Device comes with each new Option 11C Mini system. Attach the Security Device to the component side of the MSC card at the time of initial installation. The Security Device remains on the MSC card for the life of the system. The Security Device is used for system identification. This device allows the activation of features assigned to the system, through the use of a series of keycodes. The system uses keycodes for validation purposes.

Configuring data

The Option 11C Mini provides several options for making data configuration easier.

Preprogrammed data

When you first install an Option 11C Mini system, you must enter customer data into the overlay programs. Telephones, for example, must have features assigned to their keys, in order for them to function correctly. Data can be preprogrammed. If you load preprogrammed data during the installation process, the system automatically configures some overlay entries on the telephones.

If the preprogrammed data does not apply to users at one of the sites, you can revise the data on-site with a TTY. You can also revise the preprogrammed data remotely over a modem connection. You can start with a basic configuration. A basic configuration is the least possible amount of data required for initial software programming. You must perform this step while you are working in the Software Installation Program.

Model telephones

You can select many different preprogrammed model telephone layouts. Technicians can perform some basic steps at installation to activate multiple telephones, using telephone layouts or templates.

Administration telephones

If you use default model layouts for telephones and trunk routes, use an administrative telephone to make adjustments to items, such as numbering plans and access codes. You do not need a TTY input terminal for programming the Option 11C Mini unless you require a custom layout.

You can use the M2616 and M2008 digital telephones for administrative functions. The administrative telephone can double as a user's working telephone.

Set-Based Administration

The Set-Based Administration feature makes system installation and administration easier. With Set-Based Administration, you can use a telephone set to perform several administrative and maintenance procedures. Use the Set-Based Administration feature to perform tasks, such as changing data for specific features related to sets or changing Calling Party Name Display on a set.

For more information about Set-Based Administration, refer to the *Meridian 1 Set-Based Administration Guide* (553-3001-303).

Database Archive feature

The Software Installation program allows the archiving of databases which you can use to load a customer site. This feature allows you to configure multiple databases in an off-site lab environment. The Database Archive feature also allows you to save databases on a Software Delivery (PCMCIA) card until the databases are required. You can load the database into the system using the Software Delivery card.

The off-site programming of databases is subject to all security keycode restrictions. The off-site system must either use the Security Device that will be installed in the Option 11C Mini at the customer site, or must have its own keycodes for the feature set.

Refer to the *Option 11C and 11C Mini Upgrade Procedures Guide (553-3021-250)* for additional information.

Supported applications

The Option 11C Mini supports Meridian 1 applications, including the following:

- Call Pilot
- Meridian Mail Mini
- Meridian Administration Tools (MAT)
- Meridian Mobility (CT2, CT2+, PCI, and DECT)
- Meridian Integrated RAN (MIRAN)
- Meridian Integrated Conference Bridge (MICB)
- Meridian Home Office
- Meridian Call Center

- Meridian MAX
- Meridian Link / CCR
- Symposium Call Center
- Symposium Call Center Express
- Symposium Desktop Applications

Meridian Administration Tools

The Option 11C Mini interfaces with Meridian Administration Tools (MAT) Release 6.5 and later. MAT is an integrated suite of system management tools. You can use MAT to configure, control, and manage your Option 11C Mini system. MAT operates on a platform that is compatible with a standard IBM PC.

Refer to the *MAT User Guides* for information about the MAT application, its requirements, and how to install it for the Option 11C Mini system.

Meridian Mail Mini

The Option 11C Mini supports Meridian Mail Release 12.13 and later. Meridian Mail Mini provides up to 12 voice mail ports on an Option 11C Mini system. This application supports all optional features and capacity expansion.

The NT6R16AA Meridian Mail double-width card contains four physical voice ports. To increase the capacity to a maximum of 12 ports, add up to two Digital Signaling Processor (DSP) daughterboards to the card.

The NT6R16AA card contains a SCSI connector. Use the SCSI connector to connect an external tape drive.

For more information about Meridian Mail Mini, refer to the *Meridian Mail Enhanced Card Option Installation and Maintenance Guide (555-7071-210).*

System specifications

Number of card slots

The NTDK91 Option 11C Mini Main Chassis can hold a maximum of five cards. Slot 0 is dedicated to the NTDK97 MSC card; the fourth slot is dedicated to the NTDK16 48-port Digital Line Card. Program the NTDK16 in software as slots 4, 5, and 6. Slots 1-3 support existing IPE and CE cards (for example, PRI, PRI2, DTI, DTI2, MISP, and SDI/DCH).

The Chassis Expander provides four card slots. The Chassis Expander supports Meridian Mail Mini in Slot 10 only. You can place any IPE card in slots 7, 8, 9, and 10. The CE-MUX bus extends to slot 10 for Meridian Mail only.

An Option 11C Mini system, including a Main Chassis and a Chassis Expander, supports eight physical and ten logical card slots.

The following is an example of a common Main Chassis configuration:

- one MSC card in slot 0
- one analog line card in slot 1, 2, or 3
- one digital trunk card in slot 1, 2, or 3
- one analog trunk card in slot 1, 2, or 3
- one NTDK16, 48-port Digital Line Card in Slot 4

The following is an example of a common Chassis Expander configuration:

- A line card in slots 7, 8, and 9
- Meridian Mail Mini in slot 10

Trunk capacity

It is difficult to estimate system capacities, as every installation varies depending on end-user needs. In a moderate to busy work environment, however, a common ratio of users to trunks normally falls between four and six users to each trunk.

Software Generic

The Option 11C Mini supports X11 Release 24.24 and later software.

Conference channels

The MSC card supports 16 conference channels.

Power supply

The universal power supply unit is installed inside the chassis before the system is sent to the customer. The power supply unit requires no installation by the customer. The power supply operates on standard line voltages of 100-240 VAC. Total output power is 363 Watts.

Note: The Option 11C Mini system does not support DC power input.

Backup / reserve power

You can configure reserve power using an Uninterruptible Power Supply (UPS). The Option 11C Mini system does not include the UPS. The Option 11C Mini does not support battery backup.

Power failure transfer occurs when the main power to the Option 11C Mini is cut off. When this power interruption occurs, the Power Failure Transfer Unit (PFTU) connects pre-determined analog telephones directly to the Central Office (CO) trunks. The PFTU is capable of supporting a maximum of five or eight telephones, depending on the PFTU used.

Data backup and restore methods

The Option 11C Mini provides several methods of backing up customer-configured data. These methods are in one of the following categories:

- on-site backup
- remote backup over a modem connection

On-site backup

You can perform three different types of on-site backup using Overlay 143. You can backup customer data from the database in use to one of the following:

- Primary Flash Drive
- Backup Flash Drive
- external Software Delivery card (PCMCIA)

Remote backup

You can perform remote backup in Overlay 143 by using the Customer Configuration Backup and Restore (CCBR) feature. The CCBR feature allows you to backup customer-configured data to an external IBM-type PC or a Macintosh computer over a modem connection. For more information about the remote backup feature, refer to the *Customer Configuration Backup and Restore Guide* (553-3011-330).

You can perform both the on-site and remote methods of backup during normal system operation.

Restoring data

If data becomes corrupt or inoperable, you can restore backup data to the main database and Primary Flash Drive from one of the following:

- External PCMCIA Drive
- Backup Flash Drive
- a computer over a modem connection

Repair facilities

The following are the addresses for global repair facilities for the Option 11C Mini:

Asia Pacific, Caribbean and Latin America, and North America

Nortel Networks
640 Massman Drive
Nashville, Tennessee
37210
USA

Europe

Nortel Networks (Ireland) Limited
Mervue Business Park
Mervue, Galway
Ireland

Chapter 2 — Identifying the Option 11C Mini equipment

This chapter describes the main components used to install the Option 11C Mini. This chapter also describes the differences between the Option 11C Mini and Option 11C systems.

Main components of the Option 11C Mini

NTDK91 Main Chassis
NTDK92 Chassis Expander

The Main Chassis for the Option 11C Mini system is the NTDK91. The NTDK92 is the Chassis Expander. You can connect the Main Chassis to the Chassis Expander to increase the line capacity of your system.

The Main Chassis supports the following:

- NTDK97 Mini System Controller (MSC) installed in Slot 0
- any IPE or CE card in Slots 1, 2, and 3
- a dedicated 48-port Digital Line Card (NTDK16) in Slot 4

The Chassis Expander supports the following:

- Meridian Mail Mini in Slot 10 only
- With Meridian Mail Mini in Slot 10, you can insert any IPE card in Slots 7, 8, and 9.

Chassis installation options

You can install the Main Chassis and Chassis Expander in the following positions:

- on a wall
  - — vertically on a wall
  - — horizontally on a wall
- in a rack/cabinet
- on a table

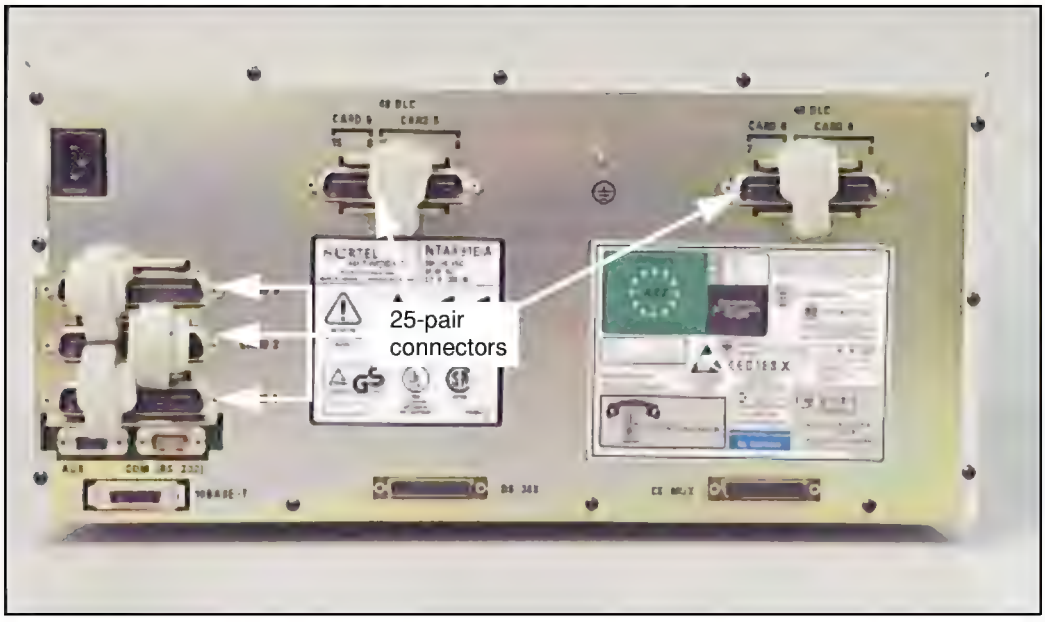
The following chassis installation kits are available:

- NTTK08AA: for vertical, wall installation
- NTTK09AA: for rack/cabinet installation
- NTTK10AA: for table-top installation
- NTTK11AA: for horizontal, wall installation

Cable connectors

25-pair cables connect cards to the cross-connect terminal. Connectors for these cables are on the back of the Main Chassis and the Chassis Expander. See Figure 2 on page 29.

Figure 2
25-pair cable connectors on the back of the Main Chassis



The Auxiliary (AUX), Serial Data Interface (SDI), and Ethernet connectors are on the back left-hand side of the Main Chassis. See Figure 3.

The AUX port connects auxiliary equipment, such as a Power Failure Transfer Unit (PFTU), to the Option 11C Mini. The SDI connector in the Main Chassis interfaces three SDI ports using a three-port SDI cable. The Ethernet connector in the Main Chassis provides a 10 Mbit Ethernet port. The Ethernet port accepts an industry-standard Medium Access Unit (MAU). Insert the Ethernet cable into this MAU.

The back of the Main Chassis also contains connectors for connecting the Main Chassis and the Chassis Expander. These connectors are for the DS-30X and CE-MUX connections. See Figure 3.

The power connector is at the back of the chassis on the upper left-hand side. See Figure 3. Secure the power cord with a cable tie.

Figure 3
Connectors on the back of the Main Chassis

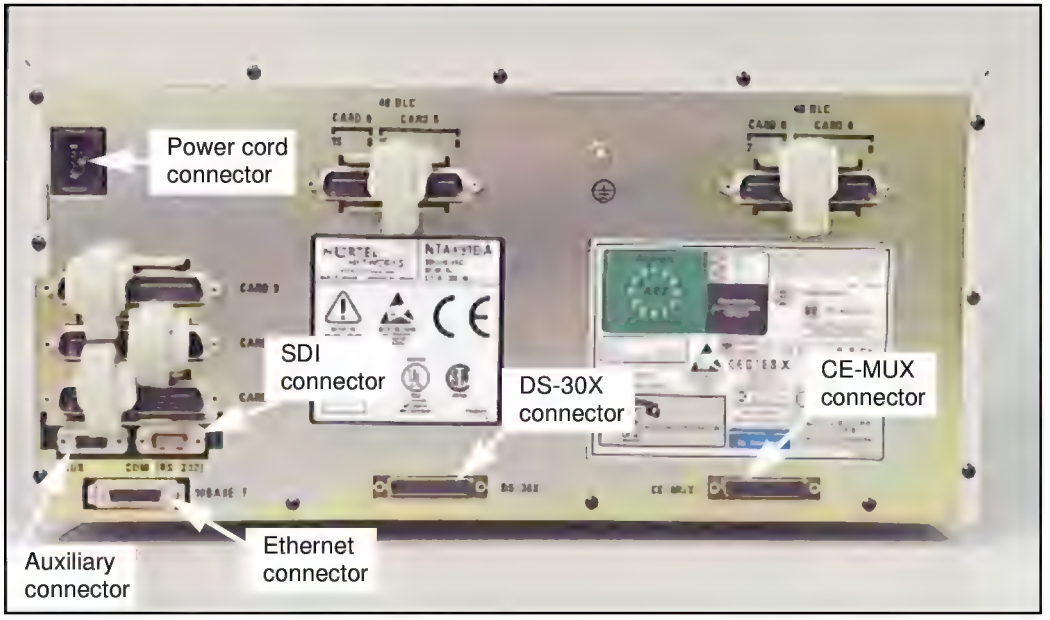
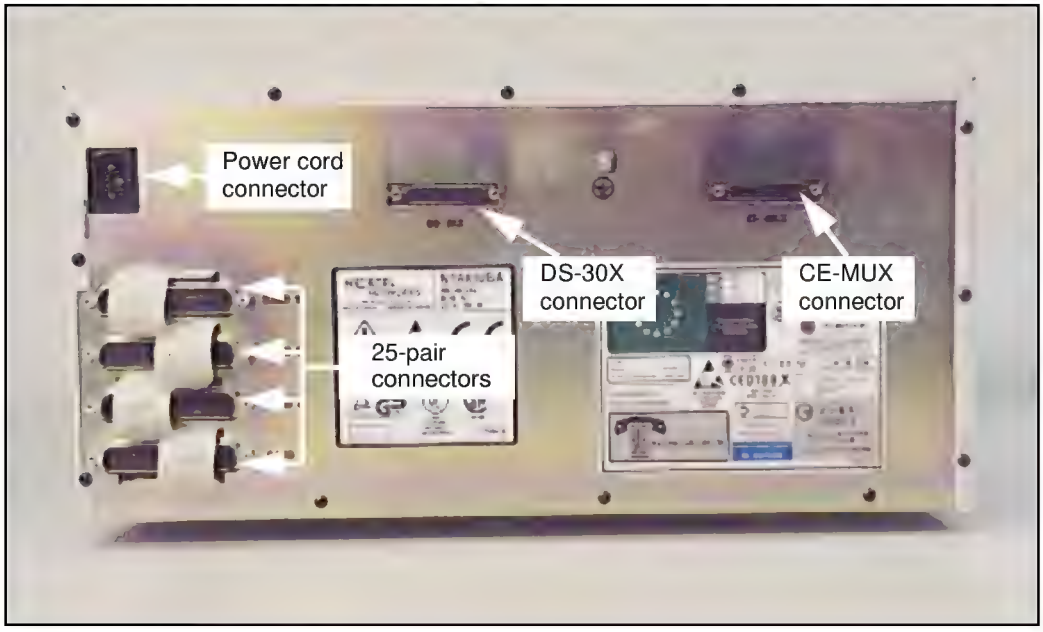


Figure 4 shows the connectors on the back of the Chassis Expander.

Figure 4
Connectors on the back of the Chassis Expander



Cooling

The NTDK91 Main Chassis and the NTDK92 Chassis Expander have forced air cooling. As a result, you can install the chassis in a horizontal or vertical position. The fan inside the chassis is controlled by heat. It runs at a reduced speed at room temperature.

CAUTION
Do not block chassis ventilation.

Power supply

The Option 11C Mini universal power supply uses AC input. The power supply is factory installed in the chassis. The power supply is not customer replaceable. The Option 11C Mini system does not support DC input.

Power switch

There is a power switch on the front of the NTDK91 Main Chassis and the NTDK92 Chassis Expander. Use this switch to turn the Option 11C Mini power on and off. See Figure 5 on page 34.

Power status indicator

There is a power status indicator (LED) on the front cover (top left-hand corner) of the Main Chassis and the Chassis Expander. When the LED is green, the power is in operation. When the LED is off, there is a power failure of one of the power outputs. See Figure 5 on page 34.

Power supply DIP switch settings

Use a DIP switch to set ringing voltages, ringing frequencies, and message waiting voltages. See Table 2 and Figure 5 on page 34 for all DIP switch setting options. Typical settings are shown for the following regions:

- "Asia Pacific/Cala power supply DIP switch settings" on page 33
- "Europe power supply DIP switch settings" on page 33
- "North American power supply DIP switch settings" on page 34

Table 1
Power supply DIP switch settings

Ringing Frequency (Hz)				Ringing Amplitude (Vrms)					Message Waiting Lamp (VDC)			
Switch Setting	20	25	50	**Switch Setting**	70	75	80	86	**Switch Setting**	-120	-150	Disable
1	ON	OFF	ON	3	OFF	ON	ON	ON	6	NOT USED		
2	ON	ON	OFF	4	OFF	OFF	ON	ON	7	OFF	OFF	ON
				5	OFF	OFF	OFF	ON	8	OFF	ON	X

Table 2
Asia Pacific/Cala power supply DIP switch settings

In the Asia Pacific/Cala region, usage of the high voltage Message Waiting Lamp is optional. The following table shows the settings for 25Hz, 75V and -150V for the Message Waiting Lamp.

Ringing Frequency (Hz)				Ringing Amplitude (Vrms)					Message Waiting Lamp (VDC)			
Switch Setting	20	25	50	**Switch Setting**	70	75	80	86	**Switch Setting**	-120	-150	Disable
1		OFF		3		ON			6		NOT USED	
2		ON		4		OFF			7		OFF	
				5		OFF			8		ON	

Table 3
Europe power supply DIP switch settings

In Europe, usage of the high voltage Message Waiting Lamp is not allowed. The following table shows the settings for 25Hz, 75V and the Message Waiting Lamp is Disabled.

Ringing Frequency (Hz)				Ringing Amplitude (Vrms)					Message Waiting Lamp (VDC)			
Switch Setting	20	25	50	**Switch Setting**	70	75	80	86	**Switch Setting**	-120	-150	Disable
1		OFF		3		ON			6		NOT USED	
2		ON		4		OFF			7			ON
				5		OFF			8			ON

Table 4
North American power supply DIP switch settings

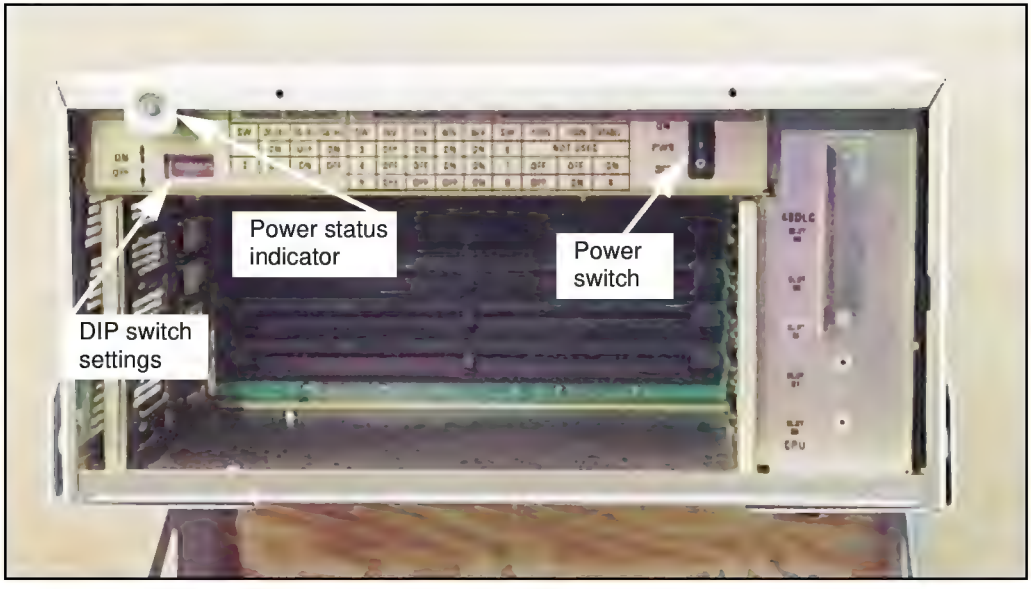
In North America, usage of the high voltage Message Waiting Lamp is optional and requires -150V when enabled. The following table shows the settings for 20Hz, 86V and the Message Waiting Lamp is disabled.

Ringing Frequency (Hz)				Ringing Amplitude (Vrms)					Message Waiting Lamp (VDC)			
Switch Setting	20	25	50	**Switch Setting**	70	75	80	86	**Switch Setting**	-120	-150	Disable
1	ON			3				ON	6	NOT USED		
2	ON			4				ON	7			ON
				5				ON	8			ON

Note: Set the dip switches before the system powers up.

Figure 5 shows the power switch, power status indicator, and DIP switch settings.

Figure 5
Front of chassis



Reserve power supply

You can use an Uninterruptible Power Supply (UPS) to provide a backup power supply for the NTDK91 and the NTDK92 chassis. A UPS provides a continuous AC power supply. Install the UPS unit according to the manufacturer's instructions. Refer to "Power consumption worksheets for the Option 11C Mini system" on page 64. This section contains worksheets to help you determine the power draw for the UPS.

Circuit cards

The Option 11C Mini introduces the NTDK97 Mini System Controller (MSC) card and the NTDK16 48-port Digital Line Card. This section provides a short overview of these two cards. For more information about these cards and the other circuit cards supported on the Option 11C Mini, refer to "Chapter 12 — Installing the circuit cards" on page 147.

NTDK97 Mini System Controller card

The NTDK97 Mini System Controller (MSC) card is based on the Option 11C NTDK20 Small System Controller (SSC) card. The MSC card includes a Central Processing Unit (CPU) which handles call processing for the system. The MSC card also includes an Ethernet controller, storage for system and customer data, and system memory.

The MSC card stores system and customer data. This card is programmed with system software before it is shipped to the customer. Additional memory on the MSC card temporarily stores and processes automated routines and user-programmed commands. The MSC card also keeps a copy of customer files in the event of data loss on the Backup Flash Drive.

You must install the MSC card in Slot 0 of the Main Chassis.

Security Device

The MSC card is equipped with a socket. This socket holds the Security Device. Each new Option 11C Mini system comes with a Security Device. You must attach the Security Device to the MSC card during initial installation.

PCMCIA interface

The NTDK97 MSC card has a 2-slot PCMCIA interface socket located on its faceplate. You can insert a Software Delivery card into the socket. Use the Software Delivery card for software upgrades on an existing Option 11C Mini system. You can also use this socket for creating an external backup copy of the customer database.

NTDK16 48-port Digital Line Card

The NTDK16 48-port Digital Line Card provides an interface to a maximum of 48 digital integrated voice and 48 data ports. The NTDK16 Digital Line Card is functionally equivalent to three NT8D02 Digital Line Cards.

Note 1: Only place the NTDK16 Digital Line Card in slot 4 of the Main Chassis.

Note 2: The NTDK16 Digital Line Card is not required for the Option 11C Mini system to operate.

Telephones and Attendant Consoles

The following is a list of the telephones and Attendant Consoles supported by the Option 11C Mini:

- Analog (500/2500 type) telephones, with or without message waiting lamps
- Meridian Digital Telephones (M2006, M2008, M2009, M2018, M2112, M2216, M2616, and M3000)
- Meridian Digital Telephones (M3110, M3310, and M3820)

  Note: The M3110, M3310, and M3820 Meridian Digital Telephones are available in Europe only.

- Meridian Digital Telephones (M3901, M3902, M3903, M3904, and M3905)

  Note: Only the M3901 and the M3905 Meridian Digital Telephones are supported in Europe.

- M2616 or M2216 Central Answering Position (CAP). These telephones must have an ACD LCD display installed to function as a CAP telephone.
- Meridian 2250 (TCM) Attendant Consoles

Cables and wires

Table 5 lists the Option 11C Mini cable kits and their contents.

Table 5
Option 11C Mini cable kits

Cable or wire	Purpose/description
NTDK88 Main cable kit	
NTBK48 three-port SDI cable	The NTBK48 connects equipment, such as TTYs and modems to the Option 11C Mini. Use the NTBK48 with the NTDK97 MSC card.
NTAK1104 AUX cable	The NTAK1104 connects a PFTU to a system chassis.
A0601396 F-M DCE to DTE converter	You can use the A0601396 when connecting SDI ports to equipment, such as TTYs and modems.
A0601397 F-F DCE to DTE converter	You can use the A0501397 when connecting SDI ports to equipment such as TTYs and modems.
A037683	Ferrite filter
NTDK89 Chassis Expander cable kit	
NTDK95 CE-MUX/DS-30X bus cable	The NTDK95 connects the Main Chassis to the Chassis Expander. You need two of these cables to connect the Main Chassis and the Chassis Expander. Length: 2 ft (610 mm)
NTTK15 cable kit for Australia/New Zealand	
A0386023 power cord for Australia and New Zealand	The A0386023 connects a system chassis to a 220 V AC commercial power source. Length: 8 ft (2438 mm)
A0376837	Ferrite filter
NTTK22 cable kit for Denmark	
A0386026 power cord for Denmark	The A0386026 connects a system chassis to a 220 V AC commercial power source. Length: 8 ft (2438 mm)
A0376837	Ferrite filter

Table 5
Option 11C Mini cable kits (Continued)

Cable or wire	Purpose/description
NTTK16 cable kit for Europe	
A0381307 power cord for Europe	The A0381307 connects a system chassis to a 220 V AC commercial power source. Length: 8 ft (2438 mm)
A0376837	Ferrite filter
NTTK14 cable kit for North America	
A0317094 power cord	The A0317094 connects a system chassis to a 110 V AC commercial power source. Length: 9 ft 10 in. (3000 mm)
NTTK17 cable kit for Switzerland	
A0386024 power cord for Switzerland	The A0386024 connects a system chassis to a 220 V AC commercial power source. Length: 8 ft (2438 mm)
A0376837	Ferrite filter
NTTK18 cable kit for the UK	
A0381306 power cord for the UK	The A0381306 connects a system chassis to a 220 V AC commercial power source. Length: 8 ft (2438 mm)

Table 6 lists miscellaneous cables and wires used with the Option 11C Mini.

Table 6
Option 11C Mini miscellaneous cables and wires

Cable and wire	Purpose / description
A0379411 power cord (International)	The A0379411 connects the chassis to a 220 V AC commercial power source Length: 8 ft. 2 in. (2492 mm)
NE-A25B 25-pair cable	The NE-A25B connects Peripheral Equipment cards to the cross-connect terminal. NE-A25B connectors are on the back of each chassis.
NTAK19FA/FB cable	The NTAK19FA/FB is a four-port SDI cable used with the NTAK02 circuit card (see Note 1).

Table 6
Option 11C Mini miscellaneous cables and wires (Continued)

Cable and wire	Purpose / description
NTAK19EC cable	The NTAK19EC is a two-port SDI cable used with the NTAK03 circuit card.
NTAK1108/1118 9-to-25 pin RS232 converter cable	The NTAK1108/1118 connects SDI ports and terminals (see Note 1).
A0378652 F-F DCE to DTE converter, or A0381016 F-M DCE to DTE converter	The A0378652 connects SDI ports to equipment, such as TTYs and modems.
NTBK04 1.5 Mbit DTI/PRI carrier cable (A0394216)	The NTBK04 connects the NTAK09 1.5 Mbit DTI/PRI card to the Channel Service Unit (CSU). The NTBK04 carries Tx and Rx pairs to a standard 5-pin connector.
NTBK05AA/DA 2.0 Mbit DTI/PRI carrier cable A0394217	The NTBK05AA/DA carries Tx and Rx pairs to a standard 120-Ohm D-connector (see Note 1).
NT8D7205	DTI/PRI carrier cable
NTBK05CA coaxial cable NTBK05DA twisted pair cable NTAK10 2.0 Mbit DTI cable NTAK79 2.0 Mbit PRI cable NTAK50 2.0 Mbit PRI cable	These cables provide DTI/PRI connections. The cables carry Tx and Rx pairs to a standard 5-pin connector (see Note 2).
25-pair inside wiring cables equipped with amphenol-type connectors	25-pair inside wiring cables extend the Peripheral Equipment connections from the system chassis to the cross-connect terminal, and connect PFTUs.
#6 AWG (#40 Metric Wire Gauge) insulated ground wire	The #6 AWG (#40 Metric Wire Gauge) connects a system chassis to a building ground source.
10 mm^2 (#6 AWG) insulated ground wire (UK)	The 10 mm^2 (#6 AWG) insulated ground wire connects a system chassis to a building ground source.

Table 6
Option 11C Mini miscellaneous cables and wires (Continued)

Cable and wire	Purpose / description
#6 AWG (20 mm^2) insulated ground wire (Europe)	The #6 AWG (20 mm^2) insulated ground wire connects a chassis to a building ground source.
#8 AWG (10 mm^2) insulated ground wire (Germany)	The #8 AWG (10 mm^2) connects a chassis to a building ground source.
Cross-connect wire	The cross-connect wire makes cross connections at the cross-connect terminal.
Note 1: This cable is available in different versions, depending on local EMC specifications. ***Note 2:*** These cables are not supported under EMC specifications VL43.140P.	

Miscellaneous items for installation

The following is a list of miscellaneous items that you can use as part of Option 11C Mini system installation. Quantities needed depend on the site and customer requirements:

- QUA6 Power Failure Transfer Units (PFTU) to transfer lines during a power or system failure
- NTBK80 grounding block
- modems or Data Communication Equipment (DCE) for remote access to the system
- on-site Data Terminating Equipment (DTE) or TTY terminal for accessing the system
- connecting blocks for the cross-connect terminal
- transformers and centralized power supplies for items such as digit displays on telephones
- optional equipment such as music sources, RAN machines, paging equipment, and CDR devices
- NTAK92 Off-Premise Protection Module for connecting up to four off-premise analog telephones

- additional Modem Eliminator (NULL Modem without hardware handshaking). The A0601397 converter may be required to interface the DTE to the system.
- industry-standard Ethernet Medium Access Unit (MAU)

Differences between Option 11C Mini and Option 11C

Refer to Table 7 for a comparison of the Option 11C Mini and Option 11C systems.

Table 7
Comparison of Option 11C Mini and Option 11C

Item	Option 11C Mini	Option 11C
Physical packaging	Main Chassis NTDK91 Chassis Expander NTDK92	Main cabinet NTAK11
	Two copper cables connect the Main Chassis to the Chassis Expander.	Fiber-optic cable connects the Main Cabinet to the Expansion Cabinet (upgraded systems may still have copper cable connection).
Capacity	Main Chassis: • 4 physical slots • logical slots (slots 1-6) Chassis Expander • 4 physical slots slots (slots 7-10)	Main Cabinet: • 10 physical slots (slots 1-10) Expansion Cabinet • Up to 4 additional NTAK11 cabinets can be connected with fiber-optic cable (slots 20-50)
	Supports up to 144 lines	Supports up to 700 lines
Chassis installation	Four chassis installation options: • vertically on a wall • horizontally on a wall • rack/cabinet • table	Two chassis installation options: • wall • floor
Cooling	Forced air, thermally controlled cooling (Fan installed inside chassis)	convection cooling

Table 7
Comparison of Option 11C Mini and Option 11C (Continued)

Item	Option 11C Mini	Option 11C
Power	• AC power only • universal power supply factory installed in chassis • not field replaceable • power switch on chassis	• AC or DC power • NTDK78/NTDK75/ NTAK04/NTAK05 • field replaceable
Reserve power	UPS only	UPS and battery backup
Cables	New NTDK95 cable introduced (Two NTDK95 cables connect the Main Chassis to the Chassis Expander)	
	Auxiliary cable used only for PFTU.	Auxiliary cable used for PFTU or to provide power for Attendant Console.
Ethernet	• standard 15-pin AUI on chassis • NTDK27 ethernet adapter cable not required • no jumper settings required	• NTDK27 ethernet adapter cable required • May need to set J7 jumper
CPU	NTDK97 Mini System Controller (MSC) • PCMCIA interface • 3 SDI ports • 30 channels TDS • 8 units DTR or XTD • 4 units of MFC, MFE/MFK5/MFK6/MFR or 8 DTR/XTD units	NTDK20 Small System Controller (SSC) • PCMCIA interface • 3 SDI ports • 30 channels TDS • 8 units DTR or XTD • 4 units of MFC, MFE/MFK5/MFK6/MFR or 8 DTR/XTD units
	• Maximum 16 conference channels	• 32 channels on SSC • 16 channels per fiber-optic daughterboard

Table 7
Comparison of Option 11C Mini and Option 11C (Continued)

Item	Option 11C Mini	Option 11C
	• C: drive on NTDK97 is 16 Mbytes • Z: drive on NTDK97 is 1.5 Mbytes • NTDK97 program store is 32 Mbytes • DRAM on NTDK97 is 16 Mbytes	• C: drive on NTDK21/NTDK81 is 8 Mbytes • Z: drive on NTDK20 is 1.5 Mbytes • NTDK21 program store is 24 Mbytes • NTDK81 program store is 32 Mbytes • DRAM - 8 or 16 Mbytes SIMM
Daughterboards	None	• NTDK21/NTDK81 Software Daughterboard • NTDK22, NTDK24, NTDK79, NTDK84, and NTDK85, Fiber-optic Expansion Daughterboards
Software	X11 Release 24.24 and later	X11 Release 22 and later
Software Installation	Software is preprogrammed on MSC card.	Software is preprogrammed on Software Daughterboard.
	Option 11C Mini uses the same feature sets, ISM parameters, and keycode format as the Option 11C.	
Software upgrades	Perform software upgrades using the same PCMCIA card as the Option 11C.	Perform Software upgrades using a PCMCIA card.
IPE and CE cards	The Option 11C Mini supports the same IPE and CE cards as the Option 11C The supported CE cards are: PRI, DTI, PRI2, DTI2, SDI/DCH, TDS/DTR, MISP	
	Only slots 1-3 in the Main Chassis support CE cards.	Only slots 1-9 in the Main Cabinet support CE cards.

Table 7
Comparison of Option 11C Mini and Option 11C (Continued)

Item	Option 11C Mini	Option 11C
48-port Digital Line Card	Only the Option 11C Mini system supports the NTDK16 48-port DLC. • only install this card in slot 4 of the Main Chassis • configured as slots 4, 5, and 6 ***Note:*** The NTDK16 Digital Line Card is not required for the Option 11C Mini system to operate.	NTDK16 not supported
Meridian Mail	Only slot 10 in the Chassis Expander supports Meridian Mail Mini.	Slot 10 in the Main Cabinet supports Meridian Mail Card Option and Meridian Mail Enhanced Card Option.

Chapter 3 — System and site requirements

Before you install the Option 11C Mini system, make sure that the site meets all environmental, grounding, power, and cross-connect terminal requirements.

Environmental requirements

The environment in which the Meridian 1 Option 11C Mini system operates must meet the following general conditions:

- Make sure that the room is clean and well ventilated. Each chassis can dissipate up to 370 Watts of power. There must be enough ventilation in the equipment room to maintain the temperature at an acceptable level.
- For installed chassis, maintain the temperature between 0° and 45° C (32° and 113° F).
- Maintain the humidity between 5% and 95% non-condensing.
- Select a location for installing the equipment that is not subject to constant vibration.
- Locate the equipment at least 12 ft (3660 mm) away from sources of electrostatic, electromagnetic, or radio frequency interference. These sources can include:
  - — power tools
  - — appliances (such as vacuum cleaners)
  - — office business machines (such as copying machines)
  - — all electric motors
  - — electrical transformers

Earthquake bracing requirements for chassis installed on a wall in a vertical position

IMPORTANT

The following earthquake bracing guidelines meet the requirements for the state of California specifications in the United States. Other areas or countries can have different requirements.

CAUTION

For earthquake bracing, you must install the Option 11C Mini chassis on a wall in a vertical position.

Note: The earthquake bracing method for the Option 11C Mini does not guarantee that the system will continue to operate during or after an earthquake.

To earthquake brace your system, use a piece of 3/4 in. (20 mm) plywood as a backboard. Fasten the plywood to the wall with a minimum of six fasteners. (Refer to Table 9 on page 47 for a description of the appropriate fasteners.) Fasten the chassis to the backboard.

Table 8 identifies the maximum acceptable wall height for different types of stud wall construction in areas prone to earthquakes.

Table 8
Minimum wall requirements – stud construction

Wall Studs	Spacing off center	Maximum Height of Wall
2 in. x 4 in. wooden studs	16 in. or 24 in.	10 ft
2 in. x 6 in. wooden studs	16 in. or 24 in.	16 ft
3 5/8 in. 20 gauge metal studs	16 in. or 24 in.	12 ft
3 5/8 in. 18 gauge metal studs	16 in. or 24 in.	16 ft

Table 9
Minimum fastener requirements

Type of wall	Fasteners	
Wooden studs	#10 wood screws	Embedded a minimum of 1 in. in wood studs
Metal studs	# 14 sheet metal screws	Embedded a minimum of 1 in. in metal studs
Concrete (2000 PSI)	1/4 in. HILTI KB-II	Embedded a minimum of 1 1/8 in.
Masonry	1/4 in. Ramset Redhead Dynabolt sleeve anchor	

Fasten the mounting bracket for each chassis to the piece of plywood with the five, 1 in. #14 screws supplied with the bracket.

"Chapter 8 — Bracing the Option 11C Mini against earthquakes" on page 105 of this guide contains a detailed procedure for earthquake bracing.

Grounding requirements

WARNING

Failure to follow grounding recommendations can result in a system installation that is:

- unsafe for personnel working on, or using the equipment
- not protected correctly from lightning or power transients
- subject to service interruptions

Before you install an Option 11C Mini and before you apply AC power, measure the impedance of the building ground reference. An ECOS 1023 POW-R-MATE, or another meter like the POW-R-MATE, is acceptable for this purpose. If the ground path connected to the Option 11C Mini has an impedance of 5 Ohms or more, make better grounding arrangements. Make any improvements to the grounding system before you install the Option 11C Mini.

The following are additional grounding requirements:

> **CAUTION**
> Never connect the single point ground conductor from the Option 11C Mini system to structural steel members or electrical conduit. Never tie this conductor to a ground source or grounded electrode that is not hard-wired to the building reference conductor.

- Ground conductors for the Option 11C Mini system:
  - — must not be smaller than #6 AWG (#40 metric) at any point (see Table 10 on page 49. This table provides a list of grounding wire requirements specific to some areas)
  - — must be routed through the same conduit as the phase conductors that serve the system
  - — must not be smaller than any phase conductor in the same conduit
  - — do not carry current under normal operating conditions
- All ground conductors in the building:
  - — must be isolated from the neutral bus except at the service entrance to the building
  - — must be hardwired to the main ground reference
- Avoid spliced conductors. Continuous conductors have lower impedance, and they are more reliable than spliced conductors.

- All conductors must terminate in a permanent way. Make sure all terminations are easily visible and available for maintenance purposes.
- Tag ground connections with a clear message such as "CRITICAL CONNECTION: DO NOT REMOVE OR DISCONNECT".

Table 10
Area-specific grounding wire requirements

Area	Grounding wire requirements
Germany	#8 AWG (10 mm^2) green/yellow wire
Other areas in Europe	not smaller than #6 AWG (16 mm^2) at any point
UK	two green/yellow wires no thinner than two 10 mm^2

CAUTION

For an installed Option 11C Mini, the impedance of the link between the ground post of the Main Chassis and the single point ground to which it connects must be less than 0.25 Ohms.

CAUTION

Transients in supply conductors and ground systems can damage integrated circuits. This damage can result in unreliable Option 11C Mini operation. Damage caused by transients is not always immediately apparent. Degradation can occur over a period of time.

Ground bus isolation (Canada and the United States)

According to the exception to article 384-20 in the United States National Electrical Code (NEC), a panel's ground bus can be isolated from the housing. This exception applies provided that the panel is not at the main service entrance. This exception applies to some Canadian locations also. For more information about ground bus isolation, refer to local electrical codes.

CAUTION

Do not isolate the ground bus from the housing unless permitted by local electrical codes. Do not perform work inside electrical panels unless you are a qualified electrician. Do not try to remove bonding conductors without approval from qualified personnel.

CAUTION

Route ground conductors, between supply panels, through the same conduit as the supply conductors. This safety requirement is part of both the National Electrical Code (NEC) and the Canadian Electrical Code (CEC).

Single Point Grounding (SPG)

Correct grounding of communications systems is necessary for protecting equipment from the hazards of surge and noise interference. The Single Point Grounding (SPG) method of protecting communications equipment is the Nortel Networks standard for Meridian 1 systems.

The requirements for Single Point Grounding are in the following major categories: Safety, Protection, EMC, Installation and Maintenance, Powering, and Advances in Technology.

Safety

For a safe working environment, your grounding system must be able to dissipate unwanted surge energies, such as lighting on the outside plant. The grounding system must be designed so that fuse or breakers operate to disrupt the excessive current flow caused by a power fault.

Protection

Correct grounding is a necessary component of the protection system for equipment. This grounding includes grounding for outside plant cable shields and protectors, and the grounds for framework, battery, and logic references.

EMC

To make sure that there is good emission and susceptibility performance of the equipment, you must consider the Electromagnetic Compatibility (EMC) grounding requirements.

Installation and Maintenance

A grounding system is cost effective to install and maintain when it is part of the initial electrical installation for the customer's premises. If you try to correct violations of national codes after the initial installation, it is both difficult and costly.

Powering

The grounding system must consider the power options for the equipment. The grounding system must consider if the equipment is backed up with an Uninterruptible Power Supply (UPS). Consider the grounding and powering of all equipment that is part of the telecommunications system as one large system. Perform the installation taking this information into consideration.

Advances in Technology

The component density on circuit cards continues to increase because of the miniaturization and multi-layering of printed circuit boards. The operating speeds of the integrated circuits are ever increasing. Grounding provides protection for these components, and is very important.

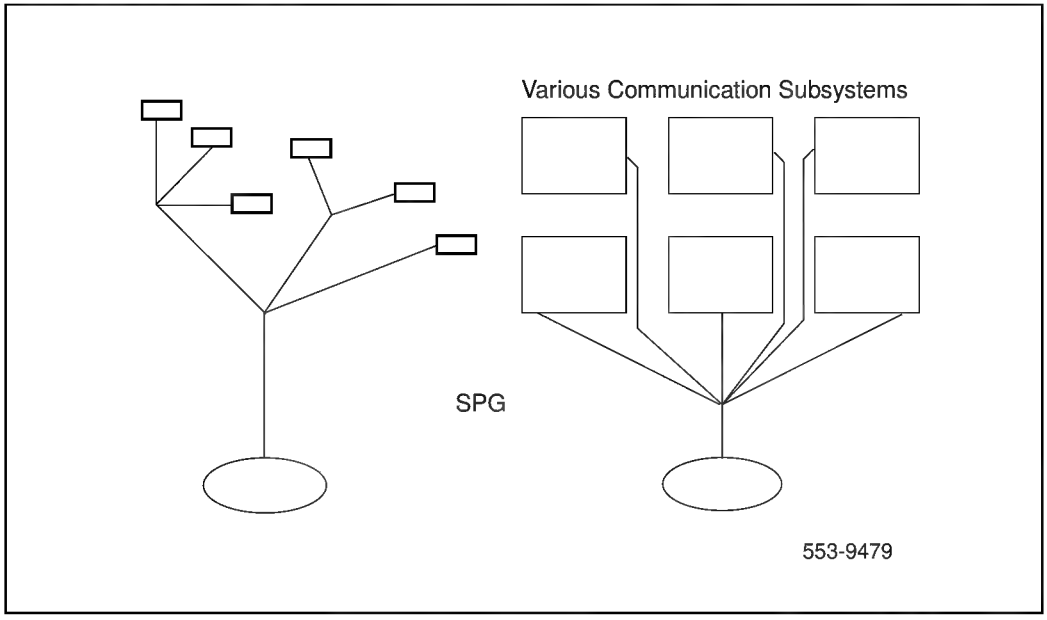
The SPG of a system is the point at which telecommunications equipment bonds to the ground. A copper busbar normally acts as the system SPG.

You can use any of the following busbars as a system SPG:

- building principal ground, normally in building with one floor
- floor ground bar, normally in buildings with more than one floor
- dedicated SPG bar bonded to the building grounding system
- a section of the battery return bar of the power plant

You can configure subsystems of a telecommunications system, such as groups of frames or equipment, as separate single point ground entities connected in a star configuration to the system SPG.

Figure 6
Single point grounding



Grounding method

CAUTION

To prevent ground loops, power all chassis from the same dedicated power panel. Ground all Main Chassis to the power panel through the grounding block. Ground the Chassis Expander to the Main Chassis.

The method of grounding used for the Option 11C Mini depends on whether the same service panel powers all chassis.

The following three grounding scenarios are possible:

1 A system with one chassis

2 A system with more than one chassis, powered by the same service panel

3 A system with more than one chassis, powered by different service panels

A system with one chassis or multiple chassis powered by one service panel

For each Main Chassis, connect a #6 AWG (#40 Metric Wire Gauge) ground wire from the chassis to the NTBK80 grounding block. See Table 10 on page 49 for grounding wire requirements specific to some areas. Connect the grounding block to a ground source (the ground bus in the AC power service panel).

Consider the Main Chassis and the Chassis Expander as the same ground. Jumper the ground wire from the Chassis Expander to the Main Chassis and then back to the grounding block.

Chassis powered by different service panels

For each Main Chassis, connect a #6 AWG (#40 Metric Wire Gauge) ground wire from the chassis to the NTBK80 grounding block. See Table 10 on page 49 for grounding wire requirements specific to some areas. If any chassis cannot be powered from the same service panel, ground it separately from the other chassis back to the service panel that supplies it. Power each Main Chassis and Chassis Expander pair from the same service panel.

Note 3: If a chassis requires a separate ground, ground it using the same method that you use for a system with one chassis.

Note 4: In the UK, you can connect the grounding wire from the chassis to an NTBK80 grounding block or through a Krone Test Jack Frame.

Grounding multiple pieces of equipment in a rack/cabinet

You must ground each piece of equipment in a rack/cabinet. If a piece of equipment does not have a ground lug, then ground the whole rack/cabinet.

Conduit requirements

Conductive conduit linking panels and equipment are legal for use as a grounding network in most countries. For all system ground paths for the Option 11C Mini, use the correct size of insulated copper conductors routed inside conduit when possible. A ground link that depends on conduit can defeat the improvements made by installing dedicated panels and transformers. The following are the reasons why:

- Personnel who service different equipment can separate conduit links. If this separation occurs between the Option 11C Mini system and the building ground reference, the conduit cannot provide a ground path. This situation is a hazardous.
- Metal conduit often corrodes, especially at threaded connections. Corrosion increases resistance. This problem becomes worse when multiple links are involved. If you apply paint over the conduit, it is possible that the corrosion process will occur more quickly.
- Always fasten conduit to secure surfaces. Often, conduit is bolted to structural steel members, which can function as ground conductors to noisy equipment (for example, compressors and motors). The coupling of these noisy signals into the Option 11C Mini grounding system can damage its performance. The resulting intermittent malfunctions can be difficult to trace.

Commercial power requirements

The Option 11C Mini system is available with AC-power only.

The optimal installation of the AC-powered Option 11C Mini system includes a direct connection to the electrical system in the building, provided some requirements are met. Refer to AC-powered installation later in this chapter for detailed information. The Main Chassis and Chassis Expander can share the same electrical breaker.

You can use an approved isolation transformer for AC-powered systems when meeting the optimum requirements is not possible or is too expensive. See "Alternative AC-powered installation" on page 58.

Refer to "Power consumption worksheets for the Option 11C Mini system" on page 64 to determine the power consumption of the Option 11C Mini.

AC power installation for systems installed on a wall or table

Use a dedicated AC service panel with the Option 11C Mini system. Do not connect equipment that is not related to the Option 11C Mini to this panel. Keep all lighting, fans, motors, air conditioning equipment, and the like, as "electrically separate" from the Option 11C Mini system as possible. The Main Chassis and Chassis Expander can share the same AC breaker.

AC power installation for systems installed in a rack/cabinet

If other data communications equipment is in the same rack/cabinet as the Option 11C Mini, power each piece of equipment from an isolated ground outlet. The same service panel must service all outlets.

Power from each outlet must meet the input requirements of at least one Option 11C Mini power supply, as listed in Tables 11 through 13. Check power requirements for other system equipment. Install additional outlets if you need to.

Table 11
AC input requirements for each NTDK91 and NTDK92 (North America)

Voltage	Recommended: 100-120 volts Maximum limits: 90 and 132 volts Single phase
Frequency	50-60 Hz
Power (I/P max)	550 VA maximum
Outlet Type	120 volt, 15 Amp supply

Table 12
AC input requirements for each NTDK91 and NTDK92 (Europe and UK)

Voltage	Recommended: 208/220 volts Maximum limits: 180 and 250 volts Single phase
Frequency	50-60 Hz
Power (I/P max)	550 VA maximum
Outlet Type	208/240 volt, 15 Amp supply

Note 1: As local power specifications vary, see a qualified local electrician when planning your power requirements.

Note 2: The Supplied power must be single-phase 240 or three-phase 208 Y, and must have a system ground conductor.

Table 13
AC input requirements for each NTDK91 and NTDK92 (Germany)

Voltage	Recommended: 230 volts Maximum limits: 180 and 250 volts Single phase
Frequency	50 Hz
Power (I/P max)	550 VA maximum
Fuse	16A
Outlet Type	Receptacles by DIN regulation

Site requirements

The following is a list of required site features for an optimal Option 11C Mini AC-powered system installation.

If a dedicated panel cannot provide the conditions listed below, use an Isolation Transformer. Refer to "Alternative AC-powered installation" on page 58.

- **Dedicated circuit breaker panel**

  A dedicated circuit breaker panel provides power only to the Option 11C Mini system and its related hardware, such as TTYs and printers

  Note: You can not always power a complete system from a single circuit-breaker panel. For example, when chassis are located remotely.

- **Insulated copper ground conductor**

  Insulated copper ground conductor connects the ground bus in the dedicated panel to the main service panel ground or building ground reference. Route the insulated copper ground conductor through the same conduit as the supply conductors that feed the panel.

- **Isolated-ground receptacles**

  All outlets connected to the dedicated panel must be of the isolated ground type. Use a separate circuit for each device connected to the panel. Outlets that provide service to the chassis must be close enough so that the power cord can reach the chassis power supply.

- **Isolated ground bus in the electrical panel, where permitted by local codes**

Location of power outlets

The maximum distance between a power outlet and the system chassis depends on the length of the power cord. In North America, the power cord is 9 ft 10 in. (3000 mm). In countries outside North America, the power cord is 8 ft 2 in. (2490 mm).

Alternative AC-powered installation

If a dedicated panel cannot provide optimal conditions, use an Isolation Transformer with the following characteristics:

- 120/208/240 VAC input, over-current protected at primary
- 120/208/240 VAC available at secondary outputs, each circuit breaker-protected
- Completely isolate primary and secondary windings from one another
- Approved for use locally as a stand-alone user product (CSA, UL, or other locally recognized clear markings)
- Capable of providing power to all Option 11C Mini system equipment operating at the same time at full load
- Equipment not related to the Option 11C Mini system must not be powered from a transformer that provides service the Option 11C Mini system.

Uninterruptible Power Supply

For backup AC power, you can use an Uninterruptible Power Supply (UPS) to feed the Option 11C Mini. The power requirement for a UPS is 550 VA per system. The maximum power requirement for a Main Chassis and a Chassis Expander on the same breaker is 1100 VA. Install the UPS according to the manufacturer's instructions.

Isolation transformer ground

The transformer ground must have the following characteristics:

- Separate grounds for primary and secondary windings, rather than a common ground
- A "clean" and permanent SPG reference at the transformer secondary for the Option 11C Mini system

Make sure that the ground conductors inside the transformer are sized correctly.

Receptacles

Receptacle requirements are as follows:

- When installed on the wall, install receptacles within reach of the chassis power cords.
- All receptacles served by the secondary must be of the isolated ground type
- The ground prong of each outlet must be connected by an insulated conductor to the system SPG

If the transformer has an isolated secondary ground lug, use it as the SPG. If it does not, use the chassis ground of the transformer as the Single Point Ground.

Installing an Isolation Transformer

Transformers with pluggable power cords:

1 Connect the power cords of all Option 11C Mini system equipment to the outlets on the transformer secondary.

2 Secure an insulated conductor between the ground lug on the Main Chassis of the Option 11C Mini and the SPG lug on the transformer. Place a "DO NOT DISCONNECT" tag on it.

Do not fasten or tie this conductor to the power cable feeding the Option 11C Mini.

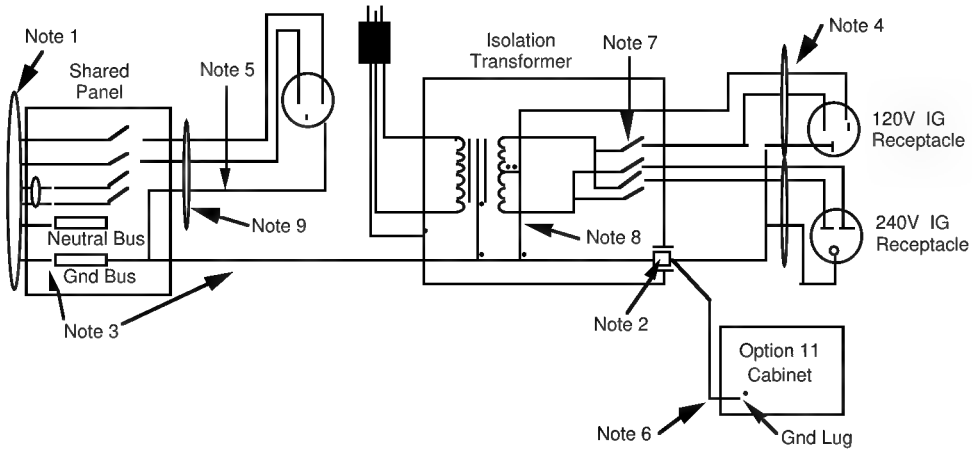
Note: Power all equipment related with the Option 11C Mini from the secondary of the transformer only. Ground all equipment to the secondary isolated ground lug. Do not connect equipment that is not related to the Option 11C Mini system to the isolation transformer that powers it.

Power the transformer primary through a dedicated circuit. If the primary has a pluggable cord, make an additional ground connection between the Option 11C Mini SPG and a known building ground reference. This connection is very important for safe and reliable operation.

CAUTION

Do not connect any system ground lines of the Option 11C Mini to structural steel or water pipes, or other unreliable ground paths. Use a ground point known to be "clean" and permanent. Place a "DO NOT DISCONNECT" tag on it. Figure 7 on page 61 shows the pluggable cord connections.

Figure 7
Typical pluggable cord Isolation Transformer wiring plan



Notes:

1 Power source is site dependent. It may be from a shared panel or transformer. Wiring may vary accordingly. Wiring to panel must be housed in conduit.

2 Make SPG at the transformer secondary. If the transformer secondary has no isolated secondary ground lug, make SPG by connecting all system ground lines to the chassis lug on the transformer case. An insulated ground connection must be made between the SPG and a known building ground reference, as per Note 3.

3 Terminate the Option 11 SPG insulated ground conductor as near as possible to the main building ground reference. Isolate the ground bus from panel housing if permitted by local codes. Conductor should be minimum AWG #6 (metric #40) at all points.

4 Wiring to receptacles must be in conduit unless they are mounted on the transformer case.

5 Connection can be made by metallic conduit. Additional copper conductor recommended.

6 Minimum AWG #6 (metric #40) insulated copper conductor connected to FGND lug on the Option 11 cabinet. Route separately from AC power cable.

7 Separate breaker required for each Option 11 Main cabinet. Breakers must be mounted on transformer if the receptacles are. If they are in a panel served by the transformer secondary, all connections between the receptacles and transformer must be in conduit. The Main Chassis and the Chassis Expander can coexist on the same breaker.

8 Connect secondary neutral (X0) to system SPG.

9 Conduit required.

553-8322.EPS

Transformers without pluggable power cords

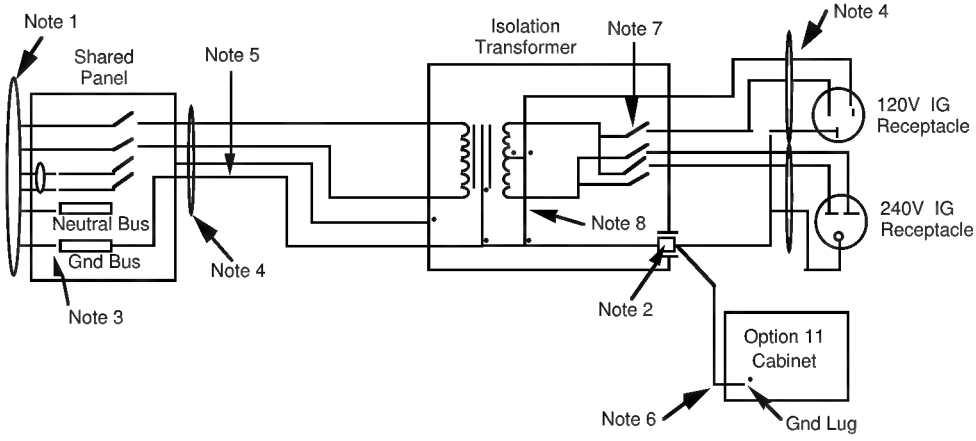
If the transformer does not have a pluggable cord, hardwire the transformer to an electrical panel. Route all wires (including grounds) through a single conduit.

Some electrical codes permit the use of conduit as the only ground conductor between pieces of equipment.

Run a separate insulated ground conductor through the conduit to hold chassis grounds together. Such a conductor maintains the safety ground connection in the event that the conduit becomes corroded or disconnected.

Run all ground lines through the same conduit as the phase conductors that serve the equipment. Figure 8 on page 63 shows the Isolation transformer connections.

Figure 8
Typical hardwired Isolation Transformer wiring plan



Notes:

1 Power source is site dependent. It may be from a shared panel or transformer. Wiring may vary accordingly. Wiring to panel must be housed in conduit.

2 Make SPG at the transformer secondary. If the transformer secondary has no isolated secondary ground lug, make SPG by connecting all system ground lines to the chassis lug on the transformer case. An insulated ground connection must be made between the SPG and a known building ground reference, as per Note 3.

3 Terminate the Option 11 SPG insulated ground conductor as near as possible to the main building ground reference. Isolate the ground bus from panel housing if permitted by local codes. Conductor should be minimum AWG #6 (metric #40) at all points.

4 Transformer primary wires must be in conduit. Wiring to receptacles must be in conduit unless they are mounted on the transformer case.

5 Connection can be made by metallic conduit. Additional copper conductor recommended.

6 Minimum AWG #6 (metric #40) insulated copper conductor connected to FGND lug on the Option 11 cabinet. Route separately from AC power cable.

7 Separate breaker required for each Option 11 Main cabinet. Breakers must be mounted on transformer if the receptacles are. If they are in a panel served by the transformer secondary, all connections between the receptacles and transformer must be in conduit. The Main Chassis and the Chassis Expander can coexist on the same breaker.

8 Connect secondary neutral (X0) to system SPG.

553-8323.EPS

Power consumption worksheets for the Option 11C Mini system

Use the worksheets (Tables 15 to 17) in this section to determine the power consumption for the Option 11C Mini system. Refer to Table 14 for the circuit card power consumption.

Table 14
Circuit card power consumption

Circuit card	Type	% active sets (off-hook)	Power consumption
NT6R16	Meridian Mail Mini	steady state	35W
NT5K02	Flexible analog line card	50%	26W
NT8D02	Digital line card	100%	25W
NT8D03	Analog line card	50%	26W
NT9D09	Message-waiting line card	50%	26W
NT8D14	Universal trunk card	DID-enabled	28W
NT8D15	E&M trunk card	N/A	29W
NTDK16	48-port Digital Line Card	100%	75w
NTDK97	Mini System Controller	N/A	15 w
NTAK02	SDI/DCH card	N/A	10W
NTAK03	TDS/DTR card	N/A	8W
NTAK09	1.5Mb DTI/PRI card	N/A	10W
NTAK10	2.0 Mb DTI card	N/A	12 W
NTAK79	2.0 Mb PRI card	N/A	12 W
NTBK50	2.0 Mb PRI card	N/A	12 W
NTBK22	MISP card	N/A	12 W

Table 15
Option 11C Mini power consumption: Main Chassis

Slot	Circuit card	Type	Power consumption from Table 14
1	NTDK97	MSC	15 w
2			
3			
4, 5, 6	NTDK16	48 port DLC	75w
		Total	

Table 16
Option 11C Mini power consumption: Chassis Expander

Slot	Circuit card	Type	Power consumption from Table 14
7			
8			
9			
10			
		Total	

Table 17
Total Option 11C Mini system power consumption

P*out* Main (total for slots 1-6 in main chassis)	
P*out* Expan (total for slots 7-10 in the chassis expander)	
Total	

Auxiliary equipment power

Terminals, printers, modems, and other data units used with the Option 11C Mini require special wiring considerations.

Power for system equipment in the switch room must:

- be powered from the same panel or transformer as the Option 11C Mini
- be grounded to the same panel or transformer as the Option 11C Mini
- be labeled at the panel to prevent interruption that is not authorized
- not be controlled by a switch between the breaker and the equipment

Service receptacles for Option 11C Mini AC systems and related equipment must be:

- of the isolated ground type, such as NEMA IG5-15
- rated for 120 or 240 V, 15 or 20A, 50-60 Hz, 3-pole, 3-wire, grounded
- grounded to the same location so as to form a Single Point Ground

Modem requirements

Equip the system with a modem to allow remote access. Refer to "Modem setup requirements" on page 192 for information about setting up the modems recommended for use with the Option 11C Mini system.

> ***Note:*** In the UK, British Telecom RACE modems require a Modem Eliminator (NULL Modem without hardware handshaking) A0378652 F-F converter or A0381016 M-F converter.

With or without Meridian Mail

The minimum requirement is a 1200 bps auto-answer modem.

If an error-correcting modem is connected to the Option 11C Mini, all flow-control and error-correcting functionality of the modem must be disabled to ensure correct operation. Refer to the modem manufacturer's instructions for information.

Maintenance and administration terminals

Refer to "Terminal setup" on page 201 for information about setting up terminals recommended for use with the Option 11C Mini system.

Under some conditions, you require a Modem Eliminator (NULL Modem without hardware handshaking) A0601397 F-F converter or A0601396 M-F to interface the TTY to the system.

The following describes the minimum requirements for a TTY device:

Without Meridian Mail

When the system does not have Meridian Mail installed, and it will not have Meridian Mail installed in the future, the minimum requirement is a VT100 compatible device.

With Meridian Mail

With Meridian Mail installed, use a VT220 compatible device.

On-site access

Equip each system with an M2616 or M2008 telephone with display. These telephones act as maintenance telephones.

You can use many different TTY terminals to access the Option 11C Mini. However, a VT220 terminal is recommended as an on-site terminal. You can use this terminal to perform service changes, maintenance and diagnostic functions, and Meridian Mail administration activities.

Remote access

Although you can use several types of modems to access the system, a 2400 baud auto-answer modem is the recommended modem. A 1200 baud modem is the minimum requirement. You can use the modem to perform service changes, maintenance and diagnostic functions, and Meridian Mail administration activities from a remote location.

> ***Note:*** You can perform additional maintenance functions through remote access on the Option 11C Mini. For additional information, refer to the *Customer Configuration Backup and Restore Guide* (553-3011-330).

Meridian Administration Tools

The Option 11C Mini supports the Meridian Administration Tools (MAT) application. For information about MAT requirements and installing MAT for the Option 11C Mini, refer to the *MAT User Guides*.

Cross-connect terminal requirements

Allow for future expansion and equipment changes at the cross-connect terminal.

The cross-connect terminal must have enough space for connecting blocks to terminate the following wires:

- five 25-pair cables from each Main Chassis
- four 25-pair cables from the Chassis Expander
- four conductors for the AUX cable from the Main Chassis
- one 25-pair cable from each QUA6 PFTU
- wiring from telephone sets and trunks

The BIX cross-connect system is recommended for use with the Option 11C Mini system. However, use of this system is not mandatory. You can use some other cross-connect systems (for example, the Krone Test Jack Frame for the UK and the Reichle Masari cross-connect terminal for Germany).

Only allow authorized personnel to access the Krone Test Jack Frame. Install the Krone Test Jack Frame in a locked room or in an environment that prevents free access to the equipment. The Krone Test Jack Frame must meet this safety requirement to receive approval.

You can find information about the BIX cross-connect system in the following documents:

- *BIX In-Building Cross-Connect System Material Description* (631-4511-100)
- *BIX In-Building Cross-Connect System Material Installation and Servicing* (631-4511-200)

Refer to "Chapter 13 — Installing and connecting the cross-connect terminal" on page 169 for additional information about the BIX, Krone Test Jack Frame, and Reichle Masari cross-connect terminals.

Chapter 4 — Creating an equipment layout plan and a card slot assignment plan

Take some time to plan the installation of the Option 11C Mini. This preparation helps to make sure that the system performs correctly. Develop a layout plan for the equipment to determine where you will position each system component.

Give consideration to the lengths of the different cables, so that you make the best use of available space. Refer to Table 5 on page 37 of this guide for a description of Option 11C Mini cable and wire specifications.

Preparation of the site according to the plan is very important. Make sure that the site is ready to accept the equipment. Make sure that items, such as power outlets and backboards, are installed correctly.

Equipment layout plan

General layout guidelines

CAUTION

Make sure that the mounting surface can support at least 100 lb (45 kg).

The following are the installation options for the Option 11C Mini chassis:

- wall installation

  - — vertically on a wall
  - — horizontally on a wall
- in a rack/cabinet
- on a table

Each Option 11C Mini chassis measures 8.4 in. (213 mm) high by 17.2 in. (437 mm) wide by 12.8 in. (325 mm) deep.

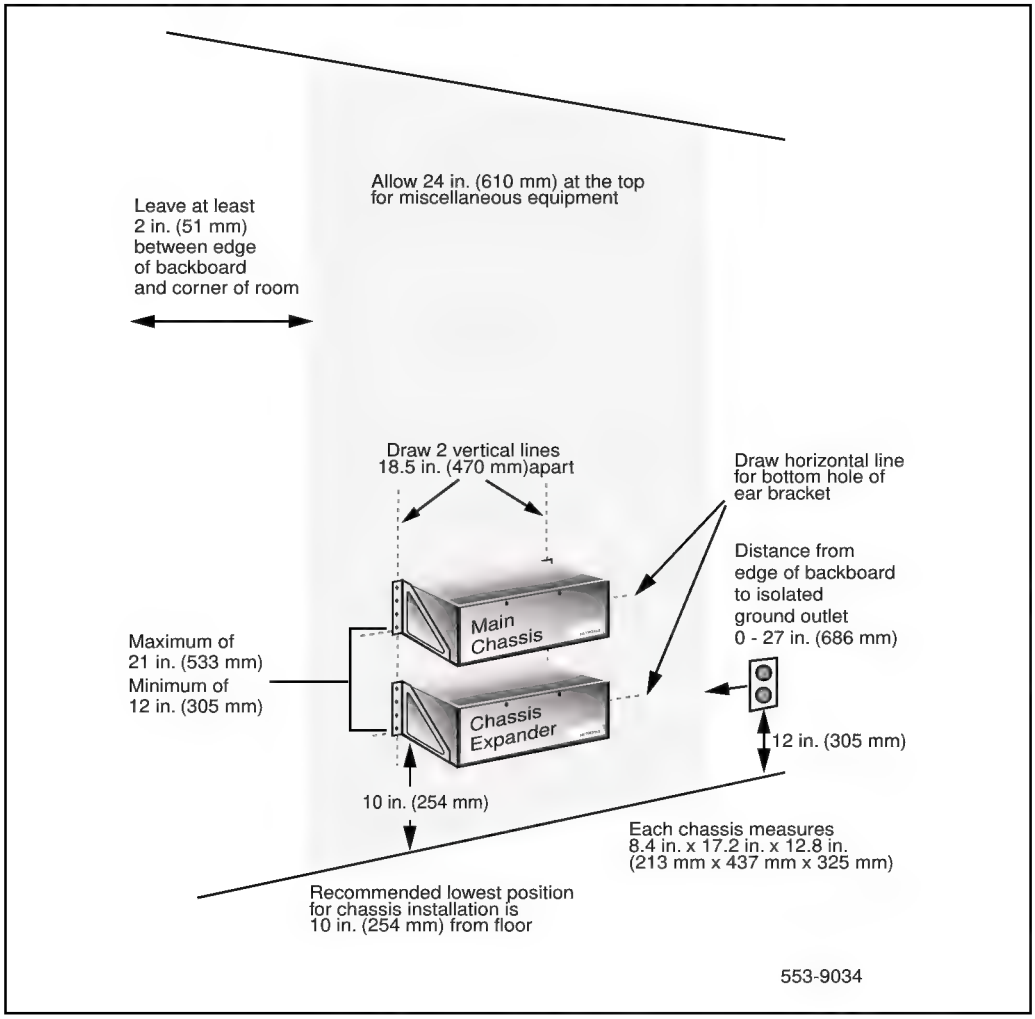
Equipment layout plan for installing the chassis on a wall horizontally and vertically

Figure 9 on page 71 shows a typical wall layout, using BIX cross-connect equipment, for installing the chassis on a wall in a horizontal position. Figure 10 on page 72 shows a typical wall layout, using BIX cross-connect equipment, for installing the chassis on a wall in a vertical position. Use of other types of terminal blocks and equipment can change the layout. As a result, if required, adjust the height at which you place the chassis in relation to other equipment. If required, also adjust the distances between the power outlets and the backboard.

Use the following guidelines to position the system equipment on a wall.

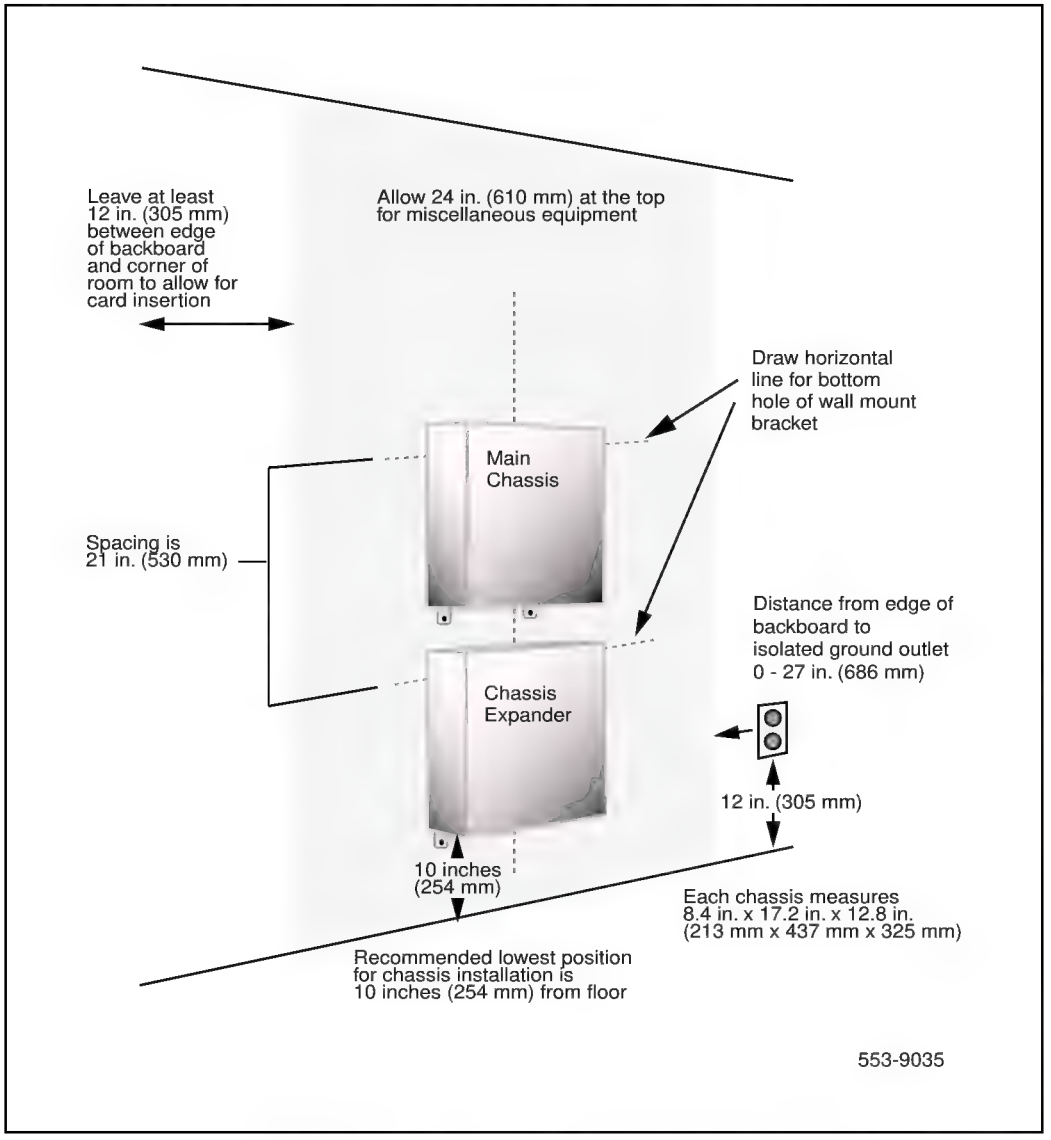
- It is recommended that you fasten a 3/4 in. (20 mm) plywood (or other material like plywood) backboard to the surface of the wall. Fasten the Option 11C Mini equipment to this backboard.
- When planning for a system with DTI/PRI capability, allow space on the backboard for the channel service unit (CSU).
- Leave at least 6 in. (155 mm) above the mounting bracket and any obstruction (such as a pipe or conduit) so that there is room to lift the chassis on and off the bracket.
- Leave at least 12 in. (305 mm) between the top of a chassis and the ceiling to make sure that there is enough ventilation for the system.
- Leave 10 in. (255 mm) between the bottom of the lower chassis and the floor to prevent water damage.
- If you use the NTAK92 Off-premises protection module, allow for correct installation (according to local practices).
- Make sure power outlets are within reach of each system chassis. See Table 5 on page 37 for cable and wire specifications.

Figure 9
Typical layout for installing the chassis on a wall in a horizontal position



Note: Leave wall space for the cross-connect terminal.

Figure 10
Typical layout for installing the chassis on a wall in a vertical position


Leave at least 12 in. (305 mm) between edge of backboard and corner of room to allow for card insertion
Allow 24 in. (610 mm) at the top for miscellaneous equipment
Draw horizontal line for bottom hole of wall mount bracket
Main Chassis
Spacing is 21 in. (530 mm)
Distance from edge of backboard to isolated ground outlet 0 - 27 in. (686 mm)
Chassis Expander
12 in. (305 mm)
10 inches (254 mm)
Each chassis measures 8.4 in. x 17.2 in. x 12.8 in. (213 mm x 437 mm x 325 mm)
Recommended lowest position for chassis installation is 10 inches (254 mm) from floor
553-9035

Note: Leave wall space for the cross-connect terminal.

Equipment layout plan for installing the chassis on a table

To install an Option 11C Mini on a table, the available space on top of the table must be large enough to hold the Main Chassis and Chassis Expander. See Figure 11.

> ***Note 1:*** If you are installing only a Main Chassis now, leave enough space for additional chassis to avoid problems in the future.
>
> ***Note 2:*** You can place the Main Chassis directly on top of the Chassis Expander.

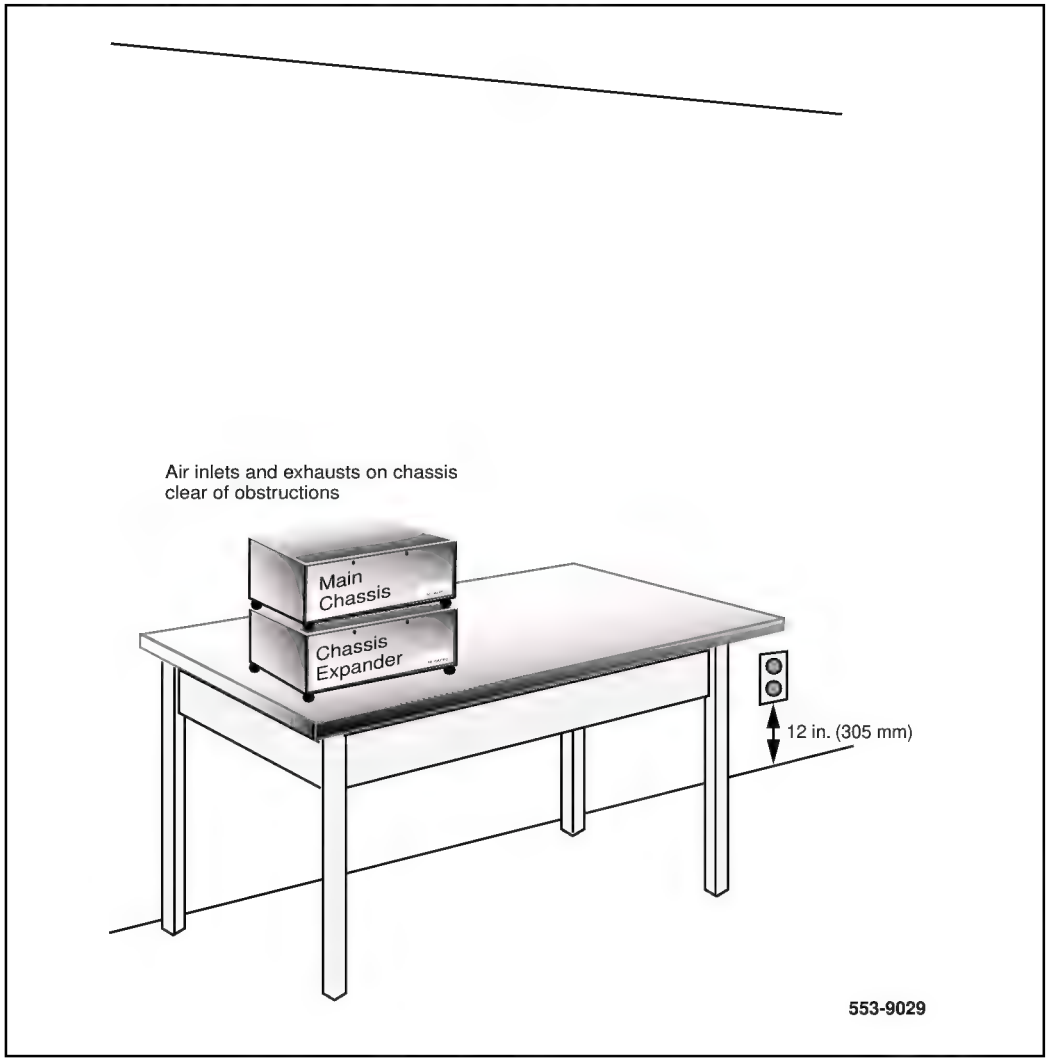
Leave enough wall space for the cross-connect terminal, the cross-connect cables, and other equipment (such as a power supply for digit displays on telephones).

CAUTION

Leave at least 12 in. (305 mm) of space between the top of the chassis and any obstruction (such as a shelf) to permit enough air circulation.

Do not place the chassis on the floor, as dust can enter the system. This results in damage to the system.

Figure 11
Typical layout for installing the chassis on a table



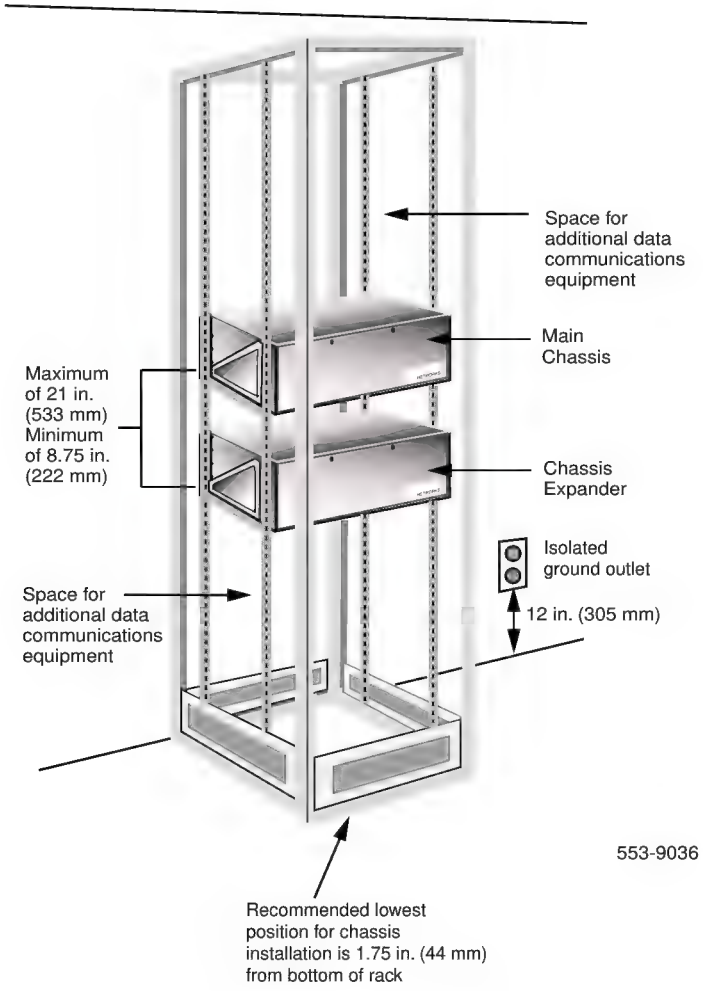
Note: Leave wall space for the cross-connect terminal.

Equipment layout plan for installing the chassis in a rack/cabinet

You can install the Main Chassis and Chassis Expander in a 19 inch rack/cabinet. There is also space in the rack/cabinet for additional pieces of Data Communications Equipment. In a rack/cabinet configuration, the lowest recommended installation position for the chassis is 1.75 inches (44 mm) from the floor. See Figure 12.

Note: The 19 inch rack/cabinet does not come with the Option 11C Mini system.

Figure 12
Typical layout for installing the chassis in a rack/cabinet


Space for additional data communications equipment
Main Chassis
Maximum of 21 in. (533 mm) Minimum of 8.75 in. (222 mm)
Chassis Expander
Isolated ground outlet
12 in. (305 mm)
Space for additional data communications equipment
553-9036
Recommended lowest position for chassis installation is 1.75 in. (44 mm) from bottom of rack

Note: Leave wall space for the cross-connect terminal.

Card slot assignments

Prepare a card slot assignment plan in advance. The card slot allocation plan shows circuit card to slot assignments. See the most current Option 11C Mini product bulletins for minimum version requirements.

> ***Note 1:*** You must insert the NTDK97 MSC card in Slot 0 of the Main Chassis. The MSC card does not support any optional daughterboards.
>
> ***Note 2:*** Slot 4 accepts the NTDK16 48-port DLC card only. However, you can place a card that takes two slots in slot 3, and it can overlap into slot 4.

You can install the following cards in slots 1, 2, and 3 of the Main Chassis:

- NTAK09
- NTAK10
- NTBK50
- NTAK79
- NTBK22
- NT6D70 (when used as a clock controller)
- NTRB21

The NTAK09 supports the following optional daughterboards:

- the NTAK20 Clock Controller
- the NTAK93 D-channel Interface
- the NTBK51 DDCH Daughterboard

The NTBK50 supports the following optional daughterboards:

- NTAK20 Clock Controller
- NTBK51 DDCH daughterboard or the NTAK93 D-channel Interface

To prepare a plan for card slot assignment, write the total number of circuit cards required for the installation in Table 18.

Table 18
Card slot assignment plan

Card	Card slot	Number of cards
Used only in the Main Chassis		
NTDK97 MSC	0 only	1
NTDK16 48-port DLC	4 only	
NTAK02 SDI/DCH		
NTAK03 TDS/DTR		
NTAK09 1.5 Mbit DTI/PRI		
NTRB21 1.5 Mbit DTI/PRI		
NTAK10 2.0 Mbit DTI		
NTAK79 2.0 Mbit PRI		
NTBK50 2.0 Mbit PRI		
NT5K20 Tone Detector		
NT5K48 Tone Detector		
NTBK22 MISP		
NT6D70 SILC		
Used only in the Chassis Expander		
NT6R16 Meridian Mail Mini	10 only	
Used in the Main Chassis and the Chassis Expander		
NT8D02 Digital Line Card		
NT8D03 Analog line card		
NT8D09 Message Waiting		
NT8D14 Universal Trunk		

Table 18
Card slot assignment plan (Continued)

Card	Card slot	Number of cards
NT8D16 Digitone Receiver		
NT8D15 E&M Trunk		
NT7D16 Data Access		
NT6D70 SILC (See Note 1)		
NT6D71 UILC		
NT5K02 XFALC		
NT5K18 XFCOT		
NT5K17 XDDI		
NT5K19 XFEM		
NT5K36 XDID/DOD		
NT5K21 XMFC/MFE		
NTAG26 XMFR		

Note 1: Install the NT6D70 SILC card in the Main Chassis (Slots 1, 2, or 3) if it is used as a clock controller.

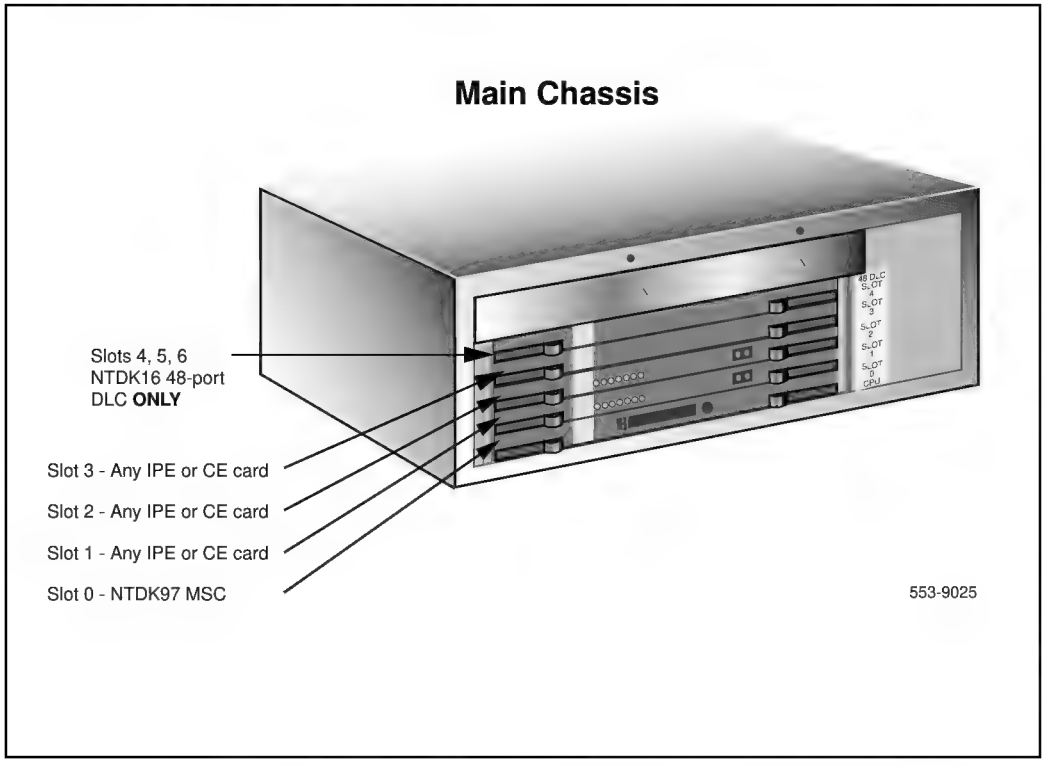
CAUTION
If you use NE-A25B cables instead of NTAK19AA and NTAK19BA cables with the NTAK02 and NTAK03 cards, continue with caution. NE-A25B cables are not wired out to station equipment or trunk circuits. NE-A25B cables can only be wired out to SDI circuits.

Make sure to first allocate the cards that you must install in the Main Chassis. Fill the remaining card slots as required.

If you plan on using the preassigned numbering plan with consecutive numbers, make sure you assign all line cards in consecutive card slots.

See Figures 13 and 14 for the card slot assignments in the Main Chassis and Chassis Expander.

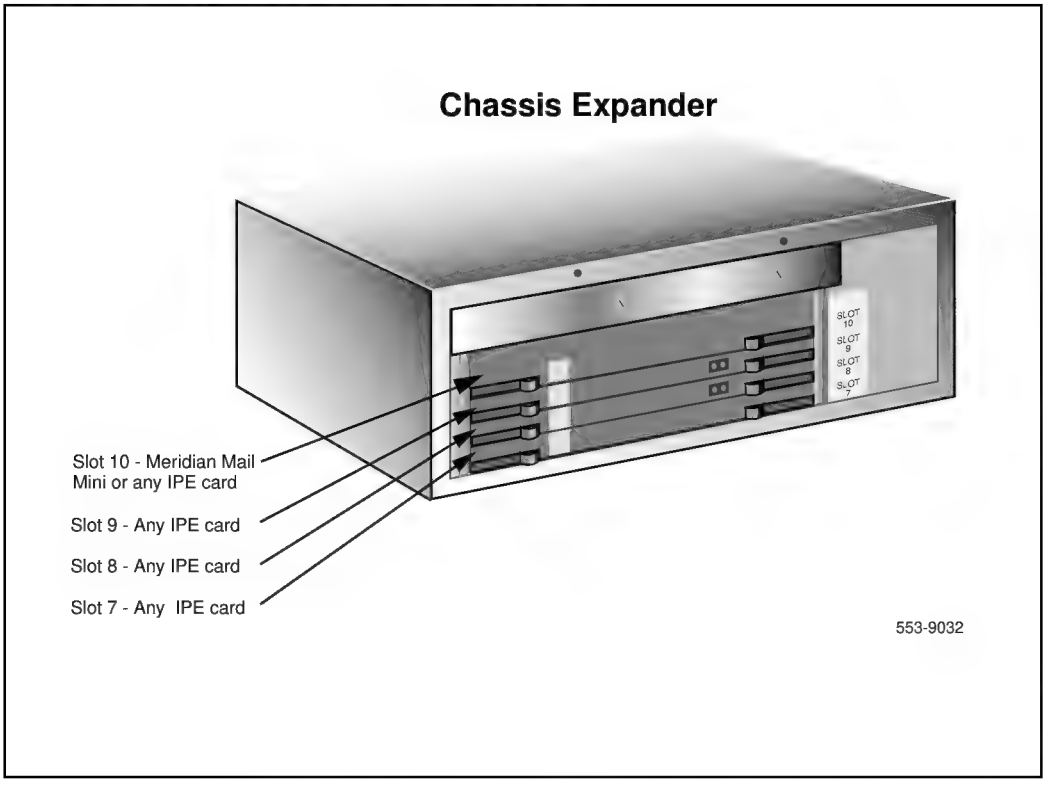
Figure 13
Card slot assignments for the Main Chassis


Main Chassis
Slots 4, 5, 6
NTDK16 48-port
DLC **ONLY**
Slot 3 - Any IPE or CE card
Slot 2 - Any IPE or CE card
Slot 1 - Any IPE or CE card
Slot 0 - NTDK97 MSC
553-9025

Note 1: Refer to Table 18 on page 78 for a list of cards that you can insert in the Main Chassis.

Note 2: Slot 4 accepts the NTDK16 48-port DLC card only. However, you can place a card that takes two slots in slot 3, and it can overlap into slot 4.

Figure 14
Card slot assignments for the Chassis Expander



Note: Refer to Table 18 on page 78 for a list of cards that you can insert in the Chassis Expander.

Chapter 5 — Regulatory information

This chapter includes regulatory information for American, Canadian, and International installations of the Option 11C Mini.

System approval

All global markets approve the Option 11C Mini system. The Option 11C Mini has a regulatory label on the back of each system chassis. This label contains national and international regulatory information.

Notice for United States installations

The Option 11C Mini system follows Part 68 of the FCC rules. A label containing the FCC registration number and Ringer Equivalence Number (REN) for the Option 11C Mini equipment is on the back of each system chassis. Provide this information to your telephone company, if it requests FCC registration number and REN information.

Importance of Ringer Equivalence Number

The FCC regulation label includes the Ringer Equivalence Number (REN). This number represents the electrical load applied to your telephone line after you plug the PBX into the wall jack. The telephone line for your premises does not operate correctly if the total ringer load exceeds the capability of the telephone company's Central Office (CO) equipment. If there are too many ringers connected to the line, there may not be enough energy to ring your system. If the ringer load exceeds the system's capabilities, you may also have problems dialing telephone numbers.

For more information about the total REN permitted for your telephone line, contact your local telephone company. However, as a guideline, a total REN of five should allow for normal operation of your equipment.

If your Meridian 1 Option 11C Mini equipment causes harm to the telephone network, the telephone company can discontinue your service temporarily. The telephone company can ask you to disconnect the equipment from the network until the problem is corrected. The telephone company can ask you to disconnect the equipment until you are sure the equipment is working correctly. If possible, the telephone company will notify you before they disconnect the equipment. You will be notified of your right to file a complaint with the FCC.

Your telephone company can make changes in its facilities, equipment, operations, or procedures that can affect the correct operation of your equipment. If the telephone company does make changes, they will give you advance notice. With advance notice, it is possible for you to make arrangements to maintain uninterrupted service.

If you experience trouble with your Option 11C Mini equipment, contact your authorized distributor or service center in the United States for repair or warranty information.

Hearing aid compatibility

All proprietary telephones used with the Meridian 1 Option 11C Mini meet with the requirements of FCC Part 68 Rule 68.316 for hearing aid compatibility.

Notice for Canadian installations

The Industry Canada label identifies certified equipment (Industry Canada was the Canadian Department of Communications). This certification means that the equipment meets certain operations, safety, and protection requirements for telecommunications networks. The Department does not guarantee that the equipment will operate to the user's satisfaction.

The Load Number (LN) assigned to each terminal device is the percentage of the total load that can be connected to a telephone loop using the device. This number prevents overload. The termination on a loop can have any combination of devices, provided that the total of the Load Numbers does not exceed 100. An alphabetical suffix is also defined in the Load Number for the appropriate ringing type (A or B), if necessary. For example, LN = 20 A indicates a Load Number of 20 and an "A" type ringer.

Before you install any equipment, must make sure that it can connect to the facilities of the local telecommunications company. You must install the equipment using an acceptable method of connection. In some cases, a certified connector assembly (telephone extension cord) can extend the company's inside wiring associated with a single line individual service. Understand that compliance with the above conditions does not always prevent degradation of service.

An authorized Canadian maintenance faciltiy, identified by the supplier, must make repairs to certified equipment. If you make repairs or modifications to this equipment (or if the equipment malfunctions), the telephone company can ask you to disconnect the equipment.

Make sure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, connect together. This precaution is for the users' protection, and is very important in rural areas.

CAUTION

The Option 11C Mini frame ground of each system chassis must be tied to a reliable building ground reference.

WARNING

Contact your local electrical inspection authority or electrician to make electrical ground connections.

Notice for international installations

If there is not enough planning or technical information available for your country of operation, contact your regional distributor or authority for help.

European compliance information

The Option 11C Mini meets the following European technical regulations: CTR 1, CTR 2, CTR 3, CTR 4, CTR 6, CTR 10, CTR 12, CTR 13, CTR 15, CTR 17, CTR 22, CTR 24, and the I-ETS 300 131.

Supported interfaces

Analog interfaces are approved based on national or European specifications. Digital interfaces are approved based on European specifications.

Safety specifications

The Option 11C Mini system meets the following European safety specifications: EN 60825, EN 60950, EN 41003

Electromagnetic Compatibility

Table 19 shows the Electromagentic Compatibility (EMC) specifications for the Option 11C Mini.

Table 19
Option 11C Mini EMC specifications

Emission:	EN 55022 EN 50082-1 EN 300329 ETS 300446	
Immunity:	EN 61000-4-2	Electrostatic discharge
	EN 61000-4-3	Electromagnetic field
	EN 61000 4-4	Fast transient burst

Canadian and United States Network connections

Give the information contained in Table 20 on page 88 to the local telephone company when ordering standard network interface jacks for the Option 11C Mini system.

Note: Table 20 on page 88 includes columns for system port identification, Facility Interface Code (FIC), Service Order Code (SOC), USOC jack identification, and the related Nortel Networks equipment part numbers.

FCC compliance: registered equipment for Direct Inward Dial (DID) calls

Part 68 of the FCC's rules state that equipment registered for Direct Inward Dial (DID) calls must provide correct answer supervision.

The definition of correct answer supervision is as follows:

- DID equipment returns answer supervision to the Central Office when DID calls are:
  - answered by the called station
  - answered by the attendant
  - routed to a recorded announcement that can be administered by the CPE user
  - routed to a dial prompt.
- DID equipment returns answer supervision on all DID calls forwarded to the Central Office. Acceptable exceptions are if:
  - a call is not answered
  - a busy tone is received
  - a reorder tone is received.

* RJ with CA for Canada

Radio and TV interference

Information for the United States

The Option 11C Mini follows Part 15 of the FCC rules in the United States. Operation is subject to the following two conditions:

- The Option 11C Mini must not cause harmful interference.
- The Option 11C Mini must accept any interference received, including interference that can cause undesirable operation.

Table 20
Network connection specifications

Ports MTS/WATS	Facility Interface Code	Service Order Code	REN	Network Jacks	Manufacturer network interface port designation
2-Wire, LSA, L-S (2-Wire, Local Switched Access, Loop-Start)	02LS2	9.0F	1.1B	RJ21X CA21X*	NT8D14
2-Wire, LSA, G-S (2-Wire, Local Switched Access, Ground-Start)	02GS2	9.0F	1.1B	RJ21X CA21X*	NT8D14
2-Wire, LSA, R-B (2-Wire, Local Switched Access, Reverse-Battery)	02RV2-T	9.0F	0.0B	RJ21X CA21X*	NT8D14
1.544 Mbit OSI, SF	04DV9-B	6.0P	N/A	RJ48 CA48*	NTAK09
1.544 MbitOSI, SF	04Dv9-C	6.0P	N/A	RJ48 CA48*	NTAK09
Analog PL facilities					
E&M Tie Trunk (TIE line, lossless, 2-wire type 1 E&M)	TL11M	9.0F	N/A	RJ2EX CA2EX*	NT8D15
E&M 4-Wire DRTT (TIE line, lossless, dial repeating, 2-wire type 1 E&M)	TL31M	9.0F	N/A	RJ2GX CA2GX*	NT8D15
E&M 4-Wire DRTT (TIE line, lossless, dial repeating, 2-wire type 2 E&M)	TL32M	9.0F	N/A	RJ2HX CA2HX*	NT8D15

If the Option 11C Mini causes interference to radio or television reception, try to correct the interference using the following measures. You can determine if there is interference by placing a telephone call while monitoring.

- Move the receiving TV or radio antenna where this can be done safely.
- Move the TV or radio in relation to the telephone equipment.

If necessary, ask a qualified radio or television technician or supplier for additional information. Also, you can refer to the document "How to Identify and Resolve Radio-TV Interference", prepared by the Federal Communications Commission. This document is available from:

U.S. Government Printing Office
Washington DC 20402

Information for Canada

The Option 11C Mini system does not exceed Class A limits for radio noise emissions from digital apparatus. The radio interference regulations of Industry Canada sets out these limits.

Chapter 6 — Installing the Option 11C Mini

This chapter contains tools and readiness checklists. Before beginning the installation, make sure you have all the tools necessary to install the Option 11C Mini. Make sure you have checked all site requirements, received all equipment, and have prepared an equipment layout plan and a card slot assignment plan.

This chapter also provides a high-level summary of installation procedures for the Option 11C Mini. Where applicable, the summary contains references to chapters that describe the procedures in more detail.

Tools checklist

To install the system correctly, make sure that the following tools are available before you begin to assemble the components:

- ☐ different types of screwdrivers
- ☐ a tape measure
- ☐ a level
- ☐ pliers such as side cutters and longnose pliers
- ☐ an ECOS 1023 POW-R-MATE or similar type of test meter
- ☐ appropriate cable terminating tools
- ☐ a drill for making lead holes for screws

Readiness checklist

Have you:

- ☐ read all ***safety instructions*** in "Chapter 7 — Important safety instructions" on page 101?
- ☐ made sure that you received all the equipment that you ordered?
- ☐ made sure your area meets all environmental requirements?
- ☐ checked for all power requirements?
- ☐ checked for correct grounding facilities?
- ☐ developed an equipment layout plan for the system? See "Equipment layout plan" on page 69.
- ☐ completed the card slot assignment plan? See "Card slot assignments" on page 77.
- ☐ assembled all the tools required to continue with the installation?

If you have completed all of the above items, you are ready to start the installation of the Option 11C Mini system.

Summary of installation procedures

The following list provides a summary of the Option 11C Mini installation procedures. Refer to the chapters and procedures indicated at the end of each step for important and detailed information related to installation.

1. Read the safety instructions in "Chapter 7 — Important safety instructions" on page 101.
2. Make sure that you have read and completed the instructions contained in the Planning section of this guide.
3. Make sure that system and site requirements have been met. See "Chapter 3 — System and site requirements" on page 45.
4. Make sure that you have created the equipment layout plan and card slot assignment plan. See "Chapter 4 — Creating an equipment layout plan and a card slot assignment plan" on page 69.

5 If your Option 11C Mini system requires earthquake bracing, refer to "Chapter 8 — Bracing the Option 11C Mini against earthquakes" on page 105.

For your system to be braced against earthquakes, you must install the chassis on a wall in a vertical position.

6 Locate the box containing the Option 11C Mini equipment.

7 Install the Main Chassis. See "Chapter 9 — Installing the chassis" on page 115. Refer to one of the following procedures, depending on the position in which you will install the chassis:

— Procedure 2: "Installing the Option 11C Mini chassis on a wall in a vertical position" on page 118

— Procedure 3: "Installing the Option 11C Mini chassis on a wall in a horizontal position" on page 123

— Procedure 4: "Installing the Option 11C Mini chassis on a table" on page 128

— Procedure 5: "Installing the Option 11C Mini chassis in a 19 inch rack/cabinet" on page 131

8 Install the Chassis Expander. See "Chapter 10 — Connecting the Chassis Expander to the Main Chassis" on page 135. You can skip this step if your system only has one chassis.

Install the Chassis Expander the same way as the Main Chassis. Refer to Procedure 6: "Adding a Chassis Expander" on page 135. This procedure describes how to connect the Main Chassis to the Chassis Expander by using the two NTDK95 CE-MUX/ DS-30X cables.

9 Install the chassis ground wire for the Main Chassis and Chassis Expander at this site. See "Chapter 11 – Installing the system ground" on page 139.

Refer to one of the following procedures:

— Procedure 7: "Grounding the Option 11C Mini chassis" on page 141

— Procedure 8: "UK grounding procedure for the Option 11C Mini chassis" on page 144

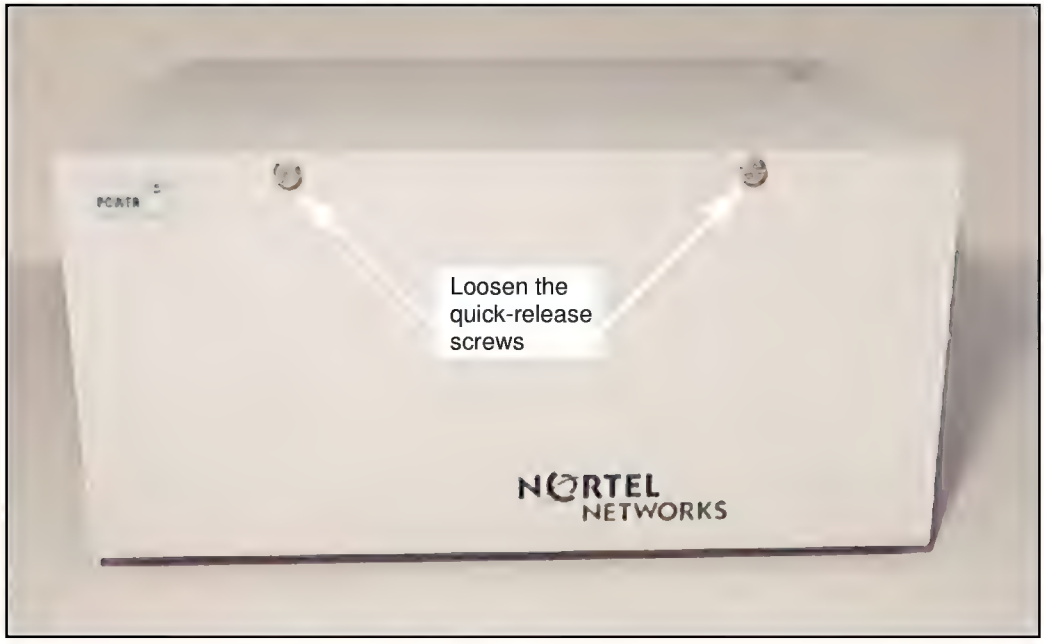
To ground multiple pieces of equipment in a rack/cabinet when one or more pieces of equipment does not have a grounding lug, see "Grounding multiple pieces of equipment in a rack/cabinet" on page 144.

10 If you require a UPS, install the UPS according to the manufacturer's instructions.

11 If you have not already done so, remove the faceplate of the chassis.

a Loosen the quick-release screws on the faceplate of the chassis. See Figure 15.

Figure 15
Faceplate on the Option 11C Mini chassis



b Lift the faceplate up.

c Remove the faceplate.

12 Install the Mini System Controller (MSC) card and the 48-port Digital Line Card.

a Install the Security Device on the NTDK97 MSC card. Install the MSC card in CPU slot 0 of the Main Chassis. See Procedure 9 "NTDK97 MSC installation" on page 153.

b Install the NTDK16 48-port Digital Line Card in Slot 4 of the Main Chassis. See Procedure 10 "NTDK16 48-port Digital Line Card installation" on page 156.
The NTDK16 Digital Line Card is not required for the Option 11C Mini system to operate.

13 Install the optional circuit cards that you wish to have in your Option 11C Mini system. Refer to "Optional circuit cards" on page 156 and the *ISDN BRI Administration and Maintenance Guide (553-3011-311)*. Also, refer to your card slot assignment plan.

14 Install the cross-connect terminal. See "Chapter 13 — Installing and connecting the cross-connect terminal" on page 169.

Refer to the following procedures:

— Procedure 19: "Installing the BIX cross-connect terminal" on page 171

— Procedure 20: "Installing the Reichle Masari cross-connect terminal (Germany)" on page 172

— Procedure 21: "Installing the Krone Test Jack Frame (UK)" on page 176

15 Install the cables from the chassis to the cross-connect terminal. See "Chapter 13 — Installing and connecting the cross-connect terminal" on page 169. Refer to Procedure 22: "Connecting the cables" on page 179.

— Install the PFTUs, if provided. See "Chapter 14 — Installing Power Failure Transfer Units" on page 185. Refer to Procedure 23: "Installing the PFTU" on page 185.

16 Connect the SDI port cable at the back of the chassis. See "Chapter 15 — Installing and connecting SDI and Ethernet ports" on page 191. Refer to Procedure 24: "Connecting SDI ports on the MSC card" on page 193.

17 If Ethernet is required, insert an industry-standard Medium Access Unit (MAU) directly into the Ethernet connector at the back of the chassis. The Option 11C Mini system does not include the MAU. Insert the Ethernet cable into this MAU. See "Chapter 15 — Installing and connecting SDI and Ethernet ports" on page 191. Refer to Procedure 26: "Connecting the Ethernet cable" on page 206.

18 Make sure that the DIP switch settings on the power supply are set to the correct values for ringing voltage, ringing frequency, and message waiting voltage. See Table 2 on page 33 for the DIP switch settings.

19 Connect the system to an AC power source. Make sure that the source matches the label on the back of the chassis. Turn the power switch to "ON".

20 Start and test system. See "Starting the Option 11C Mini" on page 209. Refer to the following procedures:

— Procedure 27: "Start-up procedure for a new system installation, using the MSC card" on page 210

— Procedure 28: "Start-up procedure for a previously installed system" on page 211

21 Install the system software. See "Installing software in a new system" on page 215. Refer to Procedure 29: "Installing software" on page 216.

22 Connect the M2616 or the M2008 administration and maintenance telephone with display. See "Chapter 17 — Connecting the telephones" on page 229.

23 Install, if you have not already installed, and activate the telephones. See "Chapter 17 — Connecting the telephones" on page 229.

24 Connect the trunks to the system. See "Chapter 18 — Connecting the trunks" on page 253.

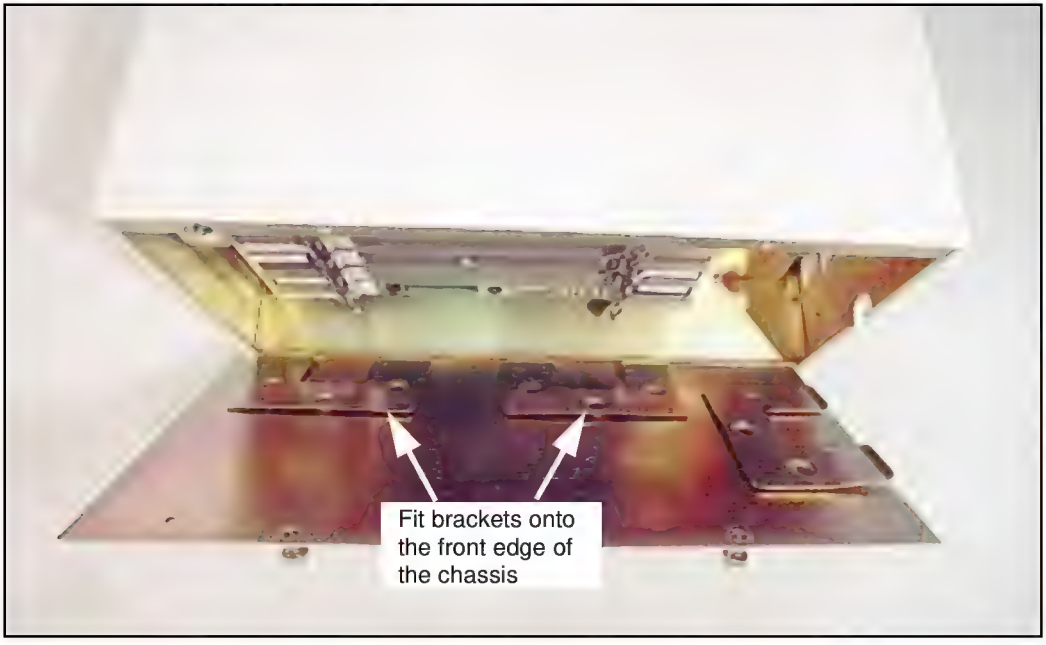
25 Perform a system backup using Overlay 43.

26 Install any remaining equipment. See "Chapter 19 — Connecting an external alarm" on page 279.

27 Replace the faceplate.

a Fit the brackets at the bottom of the faceplate into the raised edge at the bottom of the chassis. Move slightly to the left. See Figure 16.

Figure 16
Aligning the faceplate with the chassis

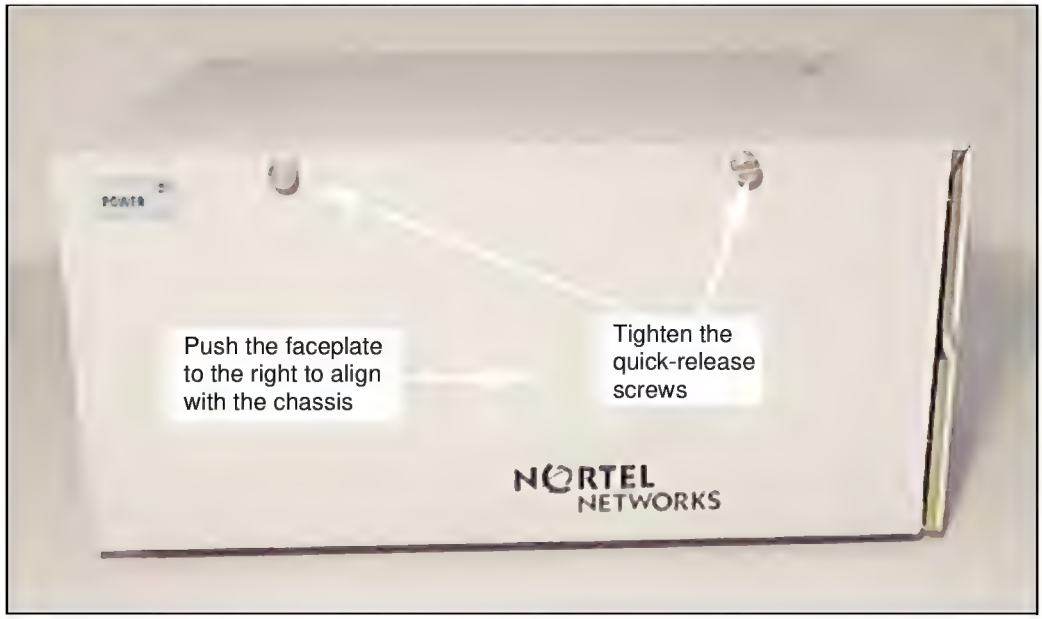


b Move the faceplate down so that it fits over the raised edge at the bottom of the chassis. See Figure 17.

Figure 17
Fitting the faceplate on to the front of the chassis

c Slide the faceplate to the right, and tighten the quick-release screws into the two holes at the top of the chassis. See Figure 18.

Figure 18
Pushing the faceplate down into place to align with chassis



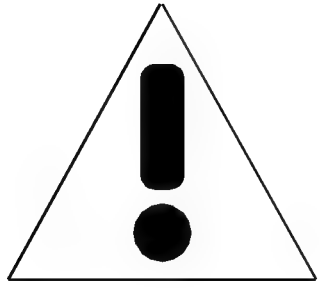
Chapter 7 — Important safety instructions

SAVE THESE INSTRUCTIONS

This chapter provides important safety information for installing and using your telephone equipment. Make sure you have quick access to this chapter, so that you can use it as a reference tool.

Symbols you must recognize

When you see the symbol shown below on Option 11C Mini equipment or documentation, look for important operating and maintenance instructions.



Safety instructions when installing telephone equipment

The following are safety instructions for installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Safety instructions when using telephone equipment

Always follow basic safety precautions when using telephone equipment. Following these safety precautions reduces the risk of fire, electric shock, and injury to persons, including the following:

- Follow all warnings and instructions marked on the product.
- Before you clean a telephone, remove the plug from the wall outlet. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use the telephone near water (for example, near a tub or sink).
- Do not place the telephone on a piece of furniture that is unstable. The telephone can fall, causing serious damage to the telephone.
- Slots and openings in the cabinet and the back or bottom of the telephone are for ventilation. These ventilation slots protect the telephone from overheating. Never block or cover these openings.

  Never block the openings on a telephone by placing the product on a surface like a bed, sofa, or rug. Never place the product near or over a radiator or heat register. Do not place the product in a built-in installation, unless there is correct ventilation.
- Only operate the product from the type of power source indicated on the marking label. If you are not sure of the type of power supply, check with your distributor.

- Some equipment has a three-wire grounding plug. This type of plug has a third grounding pin. As a safety feature, the plug only fits into an isolated ground outlet. If you cannot insert the plug completely into the outlet, contact your electrician to replace the outlet.

  Some equipment has a polarized line plug. This type of plug has one blade wider than the other. As a safety feature, this plug fits into the power outlet one way only. If you cannot insert the plug completely into the outlet, try reversing the plug. If the plug continues to not fit, contact your electrician to replace the plug.

- Do not place objects on the power cord. Do not locate the product where persons can walk on the plug.

- Do not overload wall outlets and extension cords, as fire or electrical shock can result.

- Never push objects of any kind into the product through the cabinet slots. The objects can come in contact with dangerous voltage points. Also, parts can short out, causing the risk of fire or electrical shock. Never spill liquid of any kind on to the product.

- To reduce the risk of electrical shock, do not disassemble a telephone product.

- Remove the telephone plug from the wall outlet and refer servicing to qualified personnel under the following conditions:

  — If the power supply cord or plug is damaged or worn

  — If liquid has spilled into the telephone

  — If the telephone has been exposed to rain or water

  — If the telephone has been dropped or the cabinet damaged

  — If the product shows a distinct change in performance

  — If the telephone does not function correctly under normal operating conditions

- Avoid using a telephone (except a type without a cord) during an electrical storm. There can be a remote risk of electric shock from lightning.

- Do not use the telephone to report a gas leak in the area of the leak.

Chapter 8 — Bracing the Option 11C Mini against earthquakes

This chapter provides the recommended installation method for bracing the Option 11C Mini system against earthquakes. This method does not guarantee that the system will continue to operate during or after an earthquake.

This chapter contains the following procedure:

- Procedure 1: "Earthquake bracing method" on page 105

CAUTION

To brace your Option 11C Mini system against earthquakes, you must install the Option 11C Mini chassis on a wall in a vertical position.

Method for earthquake bracing

To earthquake brace your Option 11C Mini system, fasten a 3/4 in. (20 mm) piece of plywood securely to the wall. Then, place the system components on the backboard. Do not attach the system components directly to the wall.

Procedure 1
Earthquake bracing method

1 Determine the size of the backboard.

You need a backboard that is large enough to hold all of the components that you will install on the wall. To determine the backboard size, refer to the wall plan that you developed using the guidelines in "Earthquake bracing requirements for chassis installed on a wall in a vertical position" on page 46. If you have not developed a wall plan, please develop one now.

When you have determined the required backboard size, make sure the measurements are within the limits listed in Table 21.

Table 21
Backboard size limits

	Backboard size
Minimum	2 ft by 6 ft (600 mm by 1800 mm)
Maximum	4 ft by 8 ft (1200 mm by 2400 mm)

2 Determine fastener requirements

You need the following information to determine fastener requirements:

- What fasteners you must use.
- How deeply you must embed the fasteners into the wall.
- The vertical distance between fasteners.
- The horizontal distance between fasteners.
  For wood and metal stud walls, determine this spacing by the spacing between wall studs. Wall stud spacing must be within the range listed in Table 22.

Table 22
Stud spacing

	Stud spacing
Minimum	16 in. (400 mm)
Maximum	24 in. (600 mm)

- The required wall stud sizes for wood and metal stud walls

Table 23 provides the hardware recommendations for earthquake bracing.

Table 23
Hardware recommendations

Type of wall	Fastener	Vertical spacing between fasteners	Minimum depth fasteners must be embedded in the wall	Suggested screw length
Wood stud	#10 Wood Screws	16 in. (400 mm) on center	1 in. (25 mm)	2 in. (50 mm)
Metal stud	#14 Sheet Metal Screws	16 in. (400 mm) on center		1.5 in. (37.5 mm)
Concrete	1/4 in. (6 mm) Hilti KB-II	24 in. (600 mm) on center	1 1/8 in. (28 mm)	2 in. (50 mm)
Masonry	1/4 in. (6 mm) Ramset Redhead Dynabolt Sleeve Anchor	24 in. (600 mm) on center		2 in. (50 mm)

Table 24 lists the maximum sizes of wall studs with a 16-inch spacing.

Table 24
Maximum wall stud sizes — 16 inch spacing

Wall Studs	Maximum Height of wall
Wood Studs	
2 X 4 (DF #2)	11 ft (3300 mm)
2 X 6 (DF #2)	19 ft (5700 mm)
Metal Studs	
2 1/2 X 20 Gauge	9 ft (2700 mm)
2 1/2 X 16 Gauge	10 ft (3000 mm)
2 1/2 X 14 Gauge	11 ft (3300 mm)
3 5/8 X 20 Gauge	12 ft (3600 mm)
3 5/8 X 18 Gauge	13 ft (3900 mm)
3 5/8 X 16 Gauge	14 ft (4200 mm)
3 5/8 X 14 Gauge	16 ft (4800 mm)
4 X 20 Gauge	14 ft (4200 mm)
4 X 18 Gauge	15 ft (4500 mm)

Table 24
Maximum wall stud sizes — 16 inch spacing (Continued)

4 X 16 Gauge	16 ft (4800 mm)
4 X 14 Gauge	17 ft (5100 mm)
6 X 18 Gauge	20 ft (6000 mm)

Table 25 lists the maximum sizes of wall studs with a 24-inch spacing.

Table 25
Maximum wall stud sizes - 24 inch spacing

Wall Studs	Maximum Height of wall
Wood Studs	
2 X 4 (DF #2)	10 ft (3000 mm)
2 X 6 (DF #2)	17 ft (5100 mm)
Metal Studs	
2 1/2 X 20 Gauge	8 ft (2400 mm)
2 1/2 X 18 Gauge	9 ft (2700 mm)
2 1/2 X 14 Gauge	10 ft (3000 mm)
3 5/8 X 20 Gauge	11 ft (3300 mm)
3 5/8 X 18 Gauge	12 ft (3600 mm)
3 5/8 X 16 Gauge	13 ft (3900 mm)
3 5/8 X 14 Gauge	15 ft (4500 mm)
4 X 20 Gauge	12 ft (3600 mm)
4 X 18 Gauge	13 ft (3900 mm)
4 X 16 Gauge	14 ft (4200 mm)
4 X 14 Gauge	16 ft (4800 mm)
6 X 18 Gauge	18 ft (5400 mm)

3 Determine where to place the fasteners

Refer to Figures 19 through 21 if you need help with where to place the fasteners on the backboard. In each figure, the minimum (2 ft by 6 ft) and maximum (4 ft by 8 ft) sizes of the backboard are used as examples.

- **Figure 19 on page 110** provides the fastener locations for wood and metal stud walls with the minimum acceptable stud spacing of 16 in. (400 mm).
- **Figure 20 on page 111** provides the fastener locations for wood and metal stud walls with the maximum acceptable stud spacing of 24 in. (600 mm).
- **Figure 21 on page 112** provides the fastener locations for concrete and masonry walls.

Figure 19
Plywood fastener locations for wood and metal stud walls — 16 inch spacing

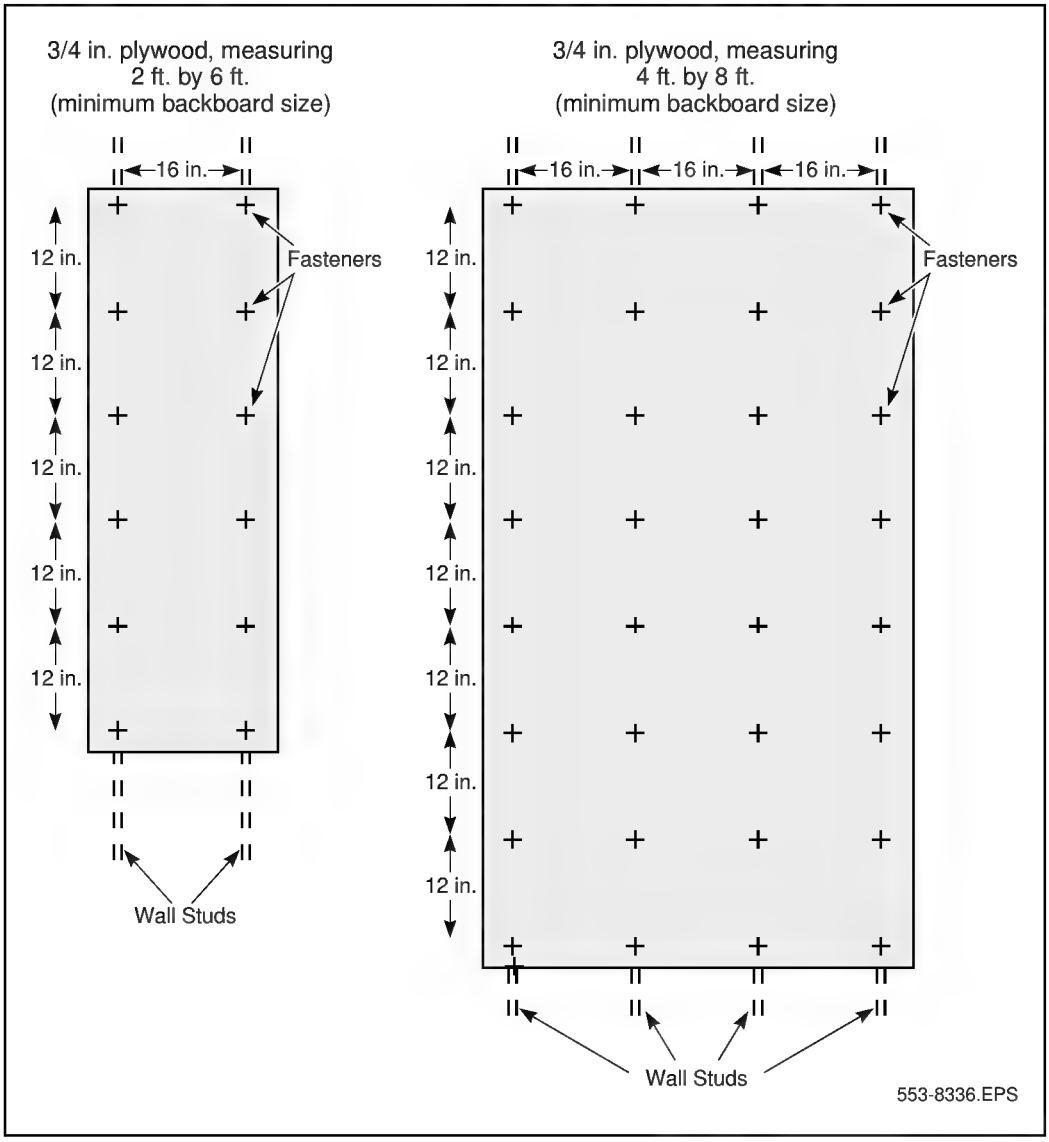


Figure 20
Plywood fastener locations for wood and metal stud walls — 24 inch spacing

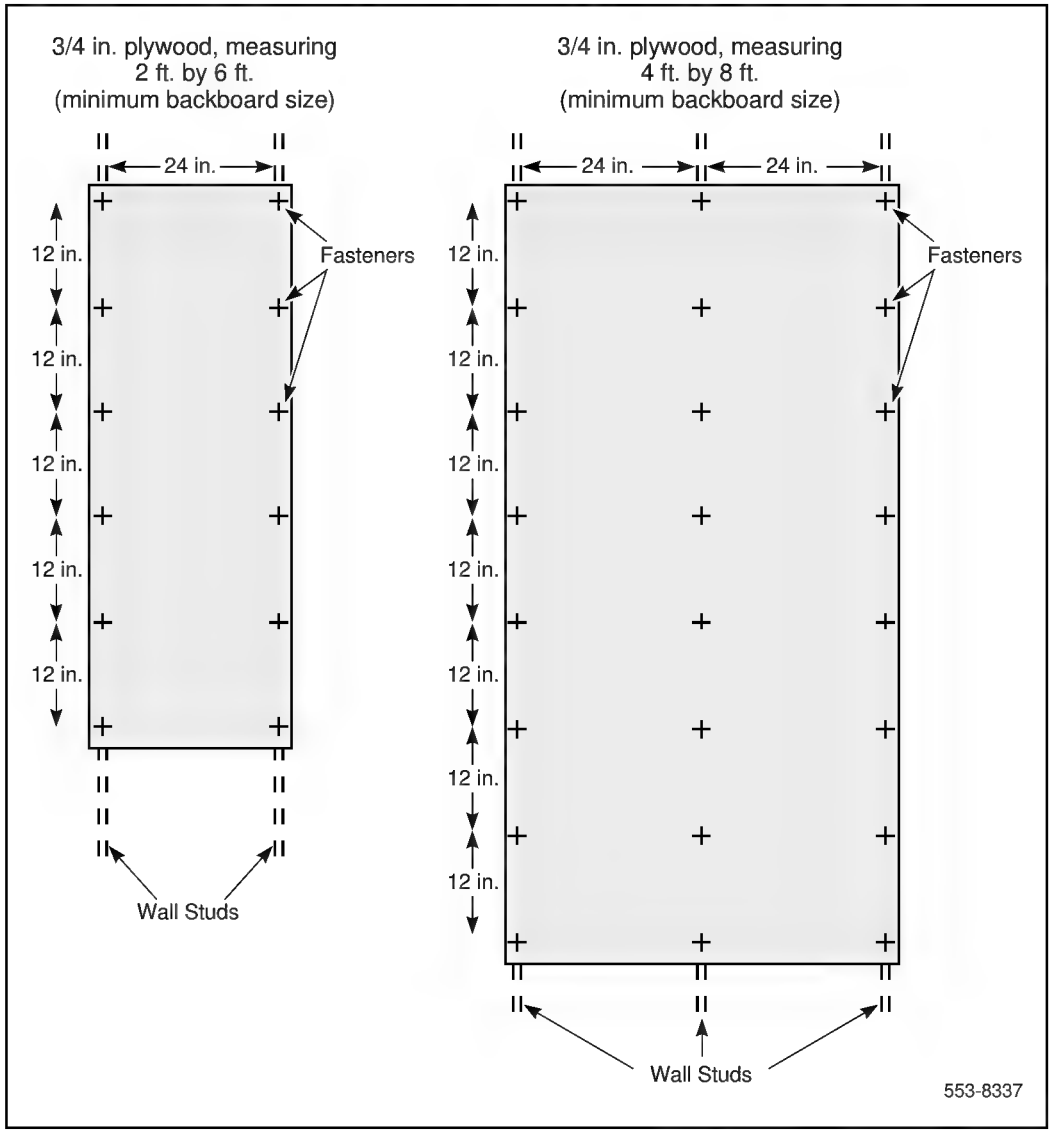
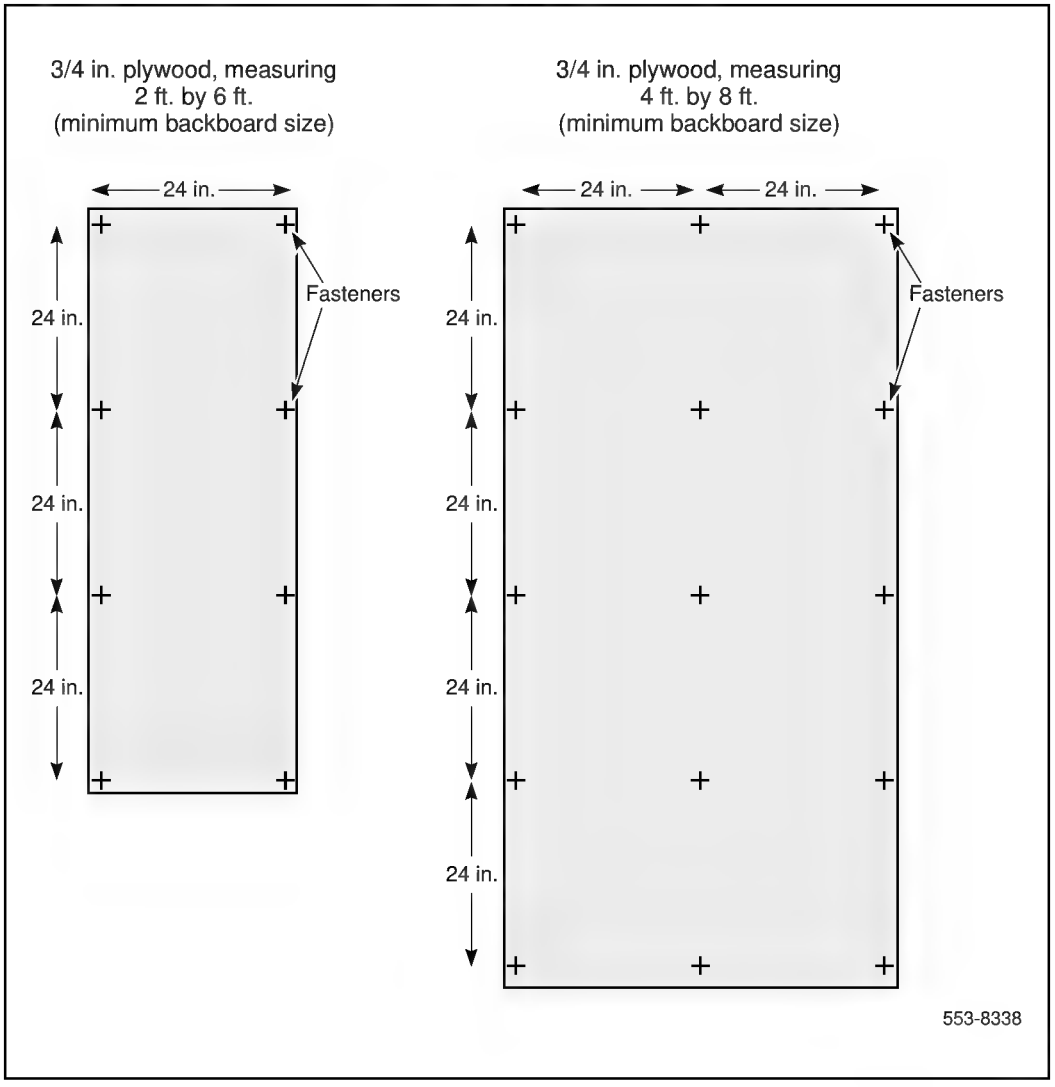


Figure 21
Plywood fastener locations for concrete and masonry walls



4 Continue with Option 11C Mini system installation

Now that you have securely fastened the backboard to the wall, you can continue with the Option 11C Mini system Installation.

End of Procedure

Chapter 9 — Installing the chassis

This chapter describes the four methods you can use to install the Option 11C Mini chassis. The following procedures describe the four installation methods:

- Procedure 2: "Installing the Option 11C Mini chassis on a wall in a vertical position" on page 118
- Procedure 3: "Installing the Option 11C Mini chassis on a wall in a horizontal position" on page 123
- Procedure 4: "Installing the Option 11C Mini chassis on a table" on page 128
- Procedure 5: "Installing the Option 11C Mini chassis in a 19 inch rack/cabinet" on page 131

This chapter also provides guidelines on how to position system components. See Figures 22, 26, 30, and 32. Also refer to "Chapter 4 — Creating an equipment layout plan and a card slot assignment plan" on page 69 for additional information.

CAUTION

If the Option 11C Mini chassis requires earthquake bracing, you must install the chassis on a wall in a vertical position. Refer to "Earthquake bracing requirements for chassis installed on a wall in a vertical position" on page 46 and "Chapter 8 — Bracing the Option 11C Mini against earthquakes" on page 105.

WARNING
An Option 11C Mini chassis is 30 lb. (13.5 kg) with circuit cards installed. An Option 11C Mini chassis is 26 lb. (12 kg) without circuit cards installed. Get help lifting the chassis if necessary.

Installing the chassis on a wall in a vertical position

Items required

To install the chassis on a wall in a vertical position, you require the following items:

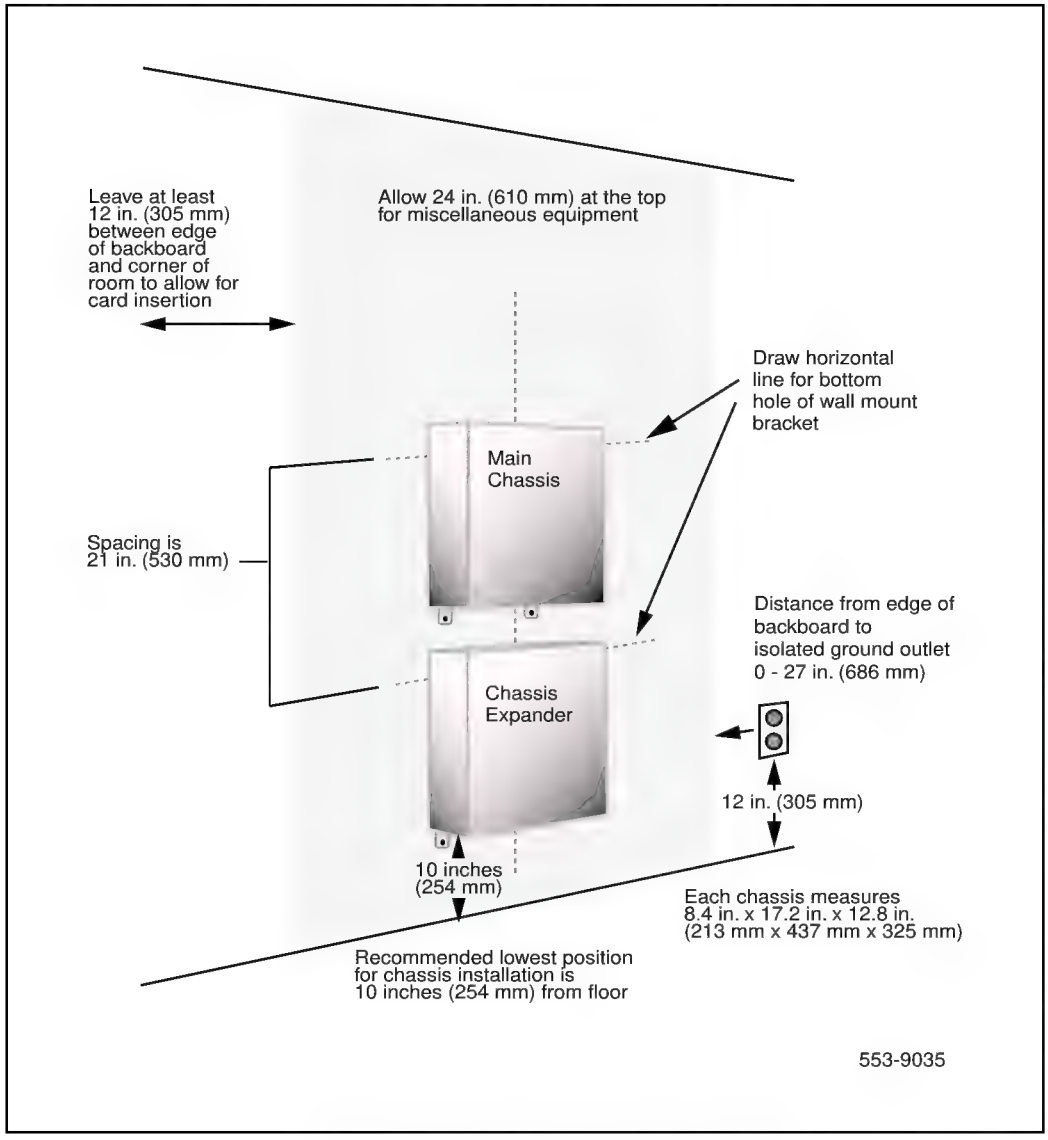
- equipment layout plan
- chassis bracket
- wall bracket
- five 1 in. #12 wood screws provided in the bracket kit (or other appropriate fasteners) to hold the wall brackets and chassis on the wall
- four #8 - 32 machine screws, used to attach the chassis brackets to the wall
- one 3/4 in. (20 mm) piece of plywood fastened to the wall

The NTTK08 bracket kit contains all of the above items, with the exception of the equipment layout plan and the plywood.

CAUTION
An Option 11C Mini chassis is 30 lb. (13.5 kg) with circuit cards installed. Make sure that you fasten the equipment securely to the wall. Use fasteners designed to hold securely to the type of surface that will support the equipment. When using 3/4 in. (20 mm) plywood, or other similar material as a backboard, make sure to attach the backboard directly to the wall studs in a minimum of six locations.

Refer to Figure 22 on page 117 for guidelines on how to position the system components.

Figure 22
Typical layout for installing the chassis on a wall in a vertical position



Note: Leave space for the cross-connect terminal.

Procedure 2
Installing the Option 11C Mini chassis on a wall in a vertical position

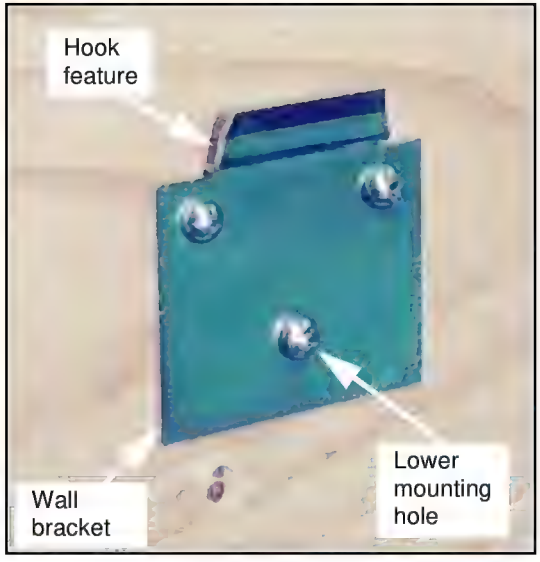
1 **Draw the vertical center line of the chassis on the plywood backboard.**
Allow for clearance on the left and right of the chassis for cables and card access. Refer to Figure 22 on page 117.

2 **Draw a horizontal line on the plywood backboard.**
This line indicates the vertical position of the lower hole of the wall bracket.

Place the wall bracket against the plywood backboard. Place the lower mounting hole over the intersection of the vertical and horizontal lines. Fasten the wall bracket securely to the plywood backboard with three #12 wood screws provided (or other appropriate fasteners). See Figure 23.

Note: Make sure that the hook feature on the wall bracket points toward the top of the backboard.

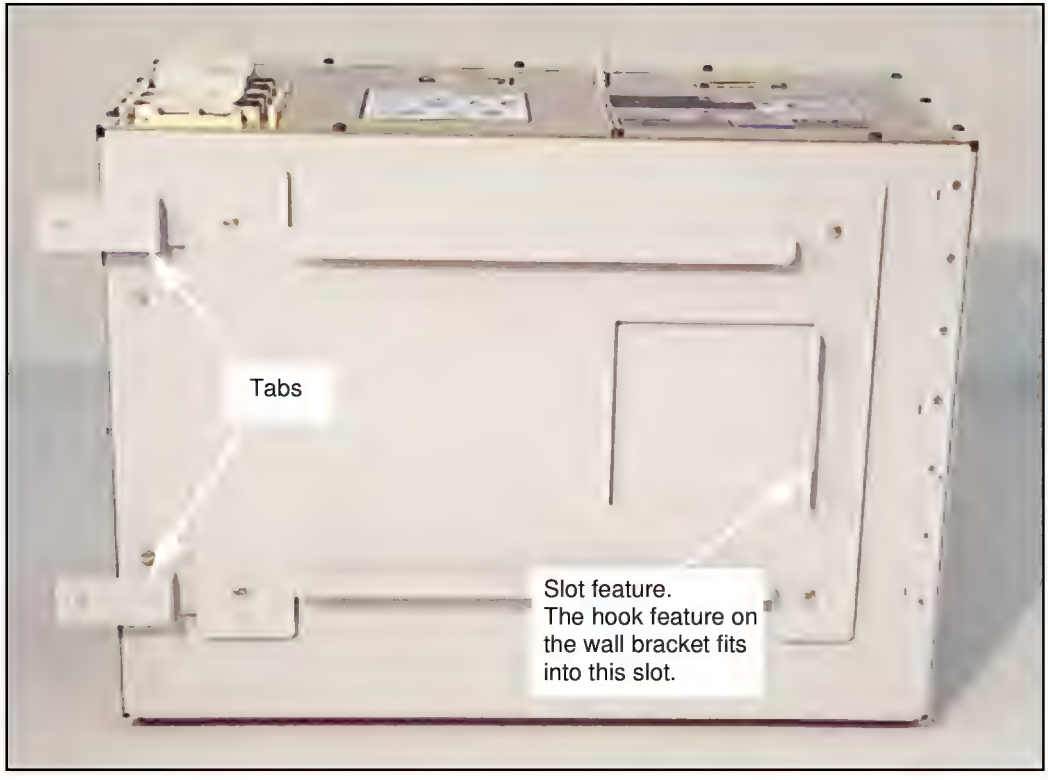
Figure 23
Wall bracket fastened to backboard



3 **Fasten the chassis bracket to the back of the chassis using the four #8-32 machine screws supplied with the bracket kit. See Figure 24.**

Note: Make sure that the slot feature on the chassis bracket is at the top of the chassis. Also, the two tabs on the chassis bracket must extend past the bottom of the chassis.

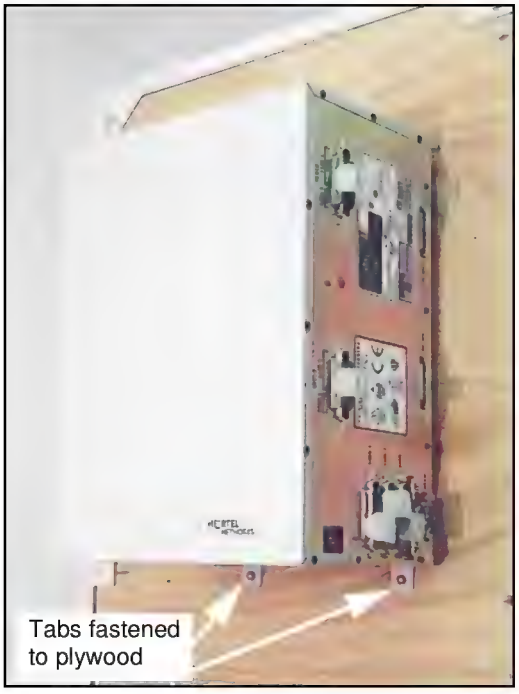
Figure 24
Chassis bracket installed on the back of the chassis



4 **Lift the chassis into place so that the slot on the chassis bracket engages the hook feature on the wall bracket.**
Carefully lower the chassis until the hook on the wall bracket fits securely into the slot on the chassis bracket.

5 **Fasten the chassis in position.**
Fasten the tabs, that extend past the bottom of the chassis, to the plywood backboard. Use the two remaining #12 wood screws from the bracket kit to fasten the tabs to the backboard. See Figure 25.

Figure 25
Chassis on a wall in a vertical position



6 **If you want to install a Chassis Expander, repeat the above steps.** Refer to the equipment layout plan for the measurements and where to place the Chassis Expander.

End of Procedure

Installing the chassis on a wall in a horizontal position

Items required

To install the chassis on a wall in a horizontal position, you require the following items:

- equipment layout plan
- one left shelf bracket
- one right shelf bracket
- eight 1 in. #12 wood screws supplied in the bracket kit (or other appropriate fasteners) to fasten the wall shelf brackets to the wall
- one 3/4 in. (20 mm.) piece of plywood fastened to the wall

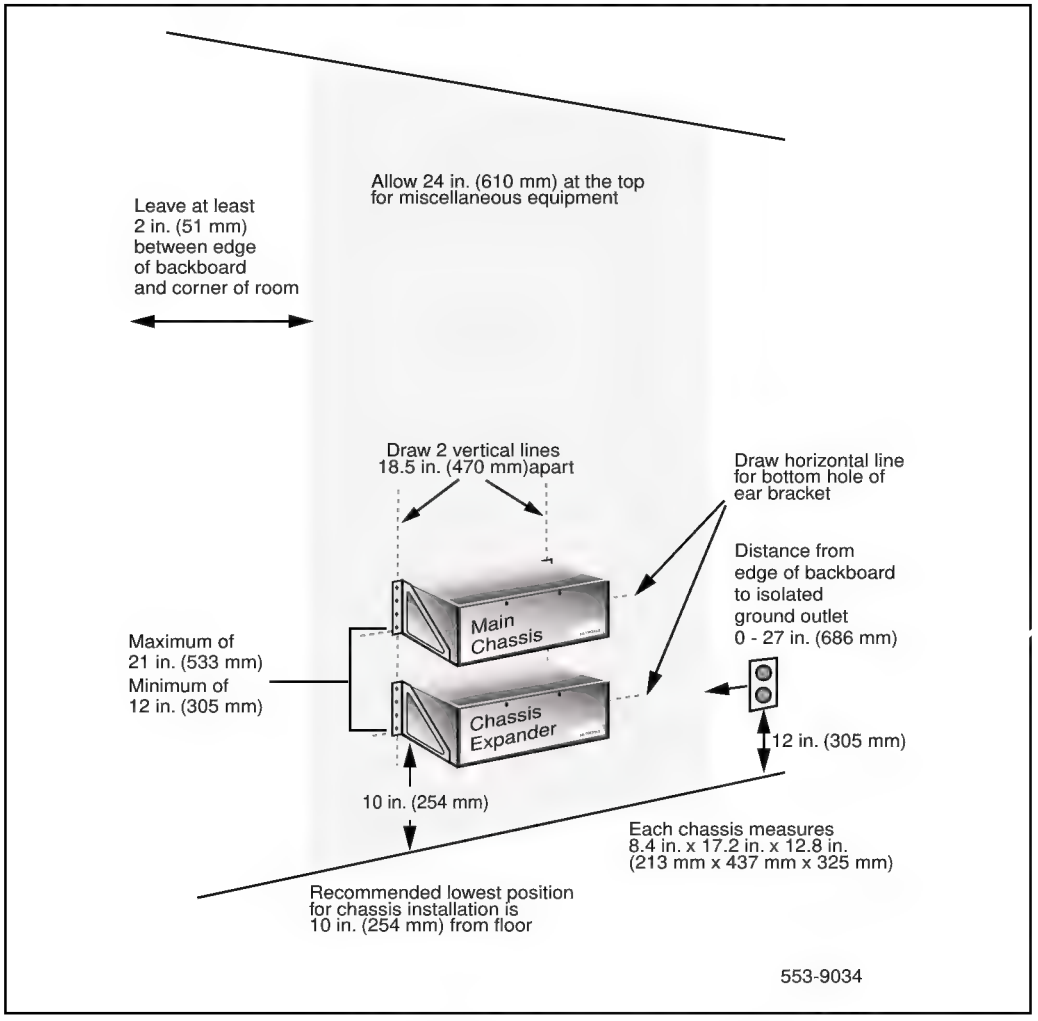
The NTTK11 bracket kit contains all of the above items, with the exception of the equipment layout plan and the plywood.

CAUTION

An Option 11C Mini chassis is 30 lb. (13.5 kg) with circuit cards installed. Make sure that you fasten the equipment securely to the wall. Use fasteners, designed to hold securely to the type of surface that will support the equipment. When using 3/4 in. (20 mm) plywood, or other similar material as a backboard, make sure you attach it directly to the wall studs in a minimum of six places.

Refer to Figure 26 on page 122 for guidelines on how to position system components.

Figure 26
Typical layout for installing the chassis on a wall in a horizontal position



Note: Leave space for the cross-connect terminal.

Procedure 3
Installing the Option 11C Mini chassis on a wall in a horizontal position

1 **Draw two vertical lines 18.5 inches apart on the plywood backboard.**
Allow for clearance on the left and right of the chassis for cables and air flow. Refer to the equipment layout plan for measurements.

2 **Draw a horizontal line on the plywood backboard.**
This line indicates the vertical position of the bottom hole on the horizontal wall shelf bracket. Refer to the equipment layout plan for measurements.

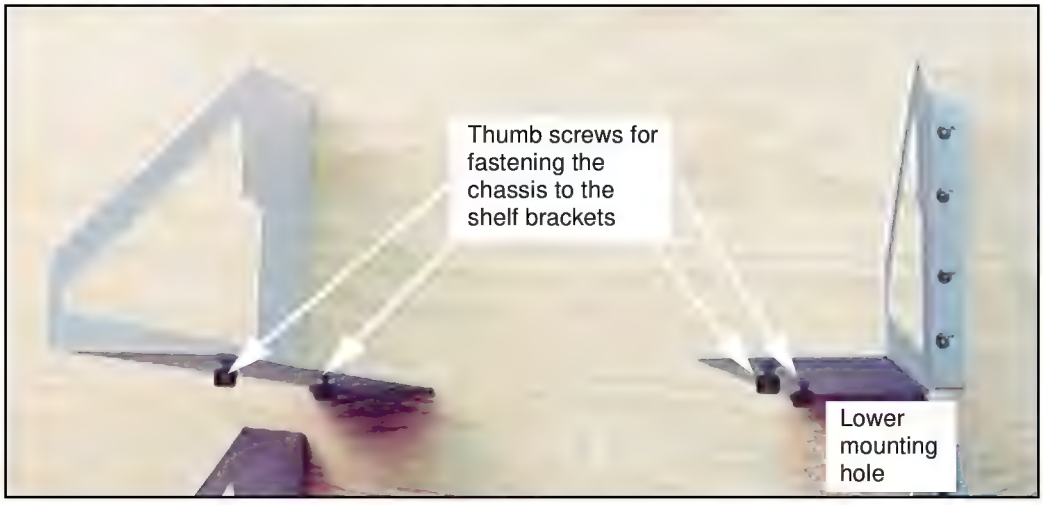
3 **Place the left shelf bracket against the plywood backboard. Place the lower mounting hole over the intersection of the left vertical line and the horizontal line.**
Fasten the shelf bracket securely to the plywood backboard. Use four #12 wood screws provided in the bracket kit (or other appropriate fasteners) to fasten the shelf bracket to the backboard.

Note: Position the shelf bracket so that the two thumb screws, located on the bottom of the bracket, face downward. Leave the screws slightly loose, so you can adjust the brackets to the width of the chassis if necessary.

4 **Place the right shelf bracket against the plywood backboard. Place the lower mounting hole over the intersection of the right vertical line and the horizontal line.** Fasten the shelf bracket securely to the plywood backboard with the remaining four #12 wood screws provided in the bracket kit (or other appropriate fasteners). See Figure 27.

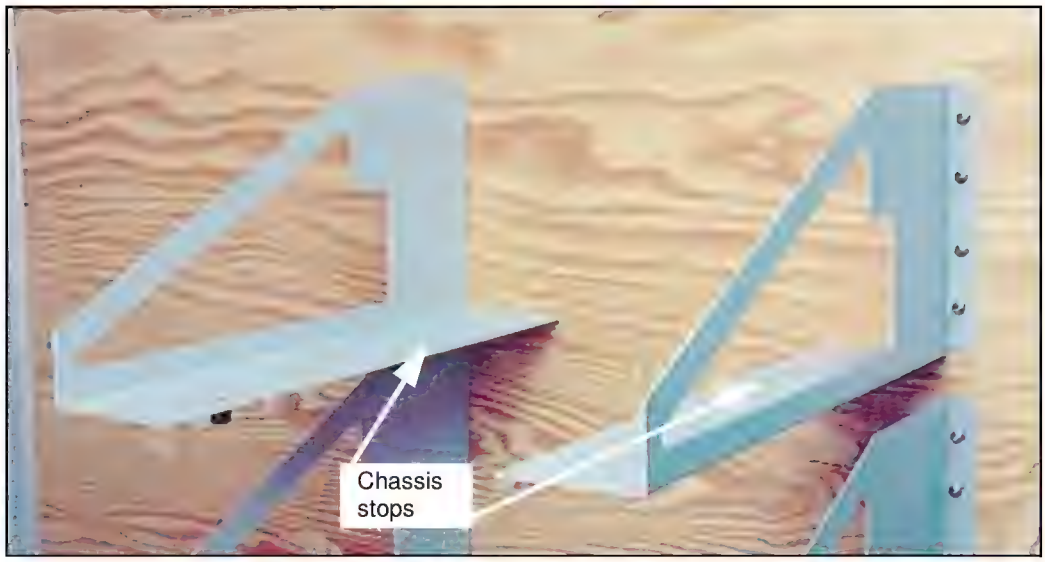
Note: Make sure the shelf bracket is oriented with the two thumb screws, located on the bottom face of the bracket, facing downwards. Leave the screws slightly loose, so you can adjust the brackets to the width of the chassis if necessary.

Figure 27
Thumb screws on the wall shelf brackets



5 **Place the chassis on the shelf brackets.**
Carefully slide the chassis on the wall shelf brackets until it touches the chassis stops on the brackets. See Figure 28.

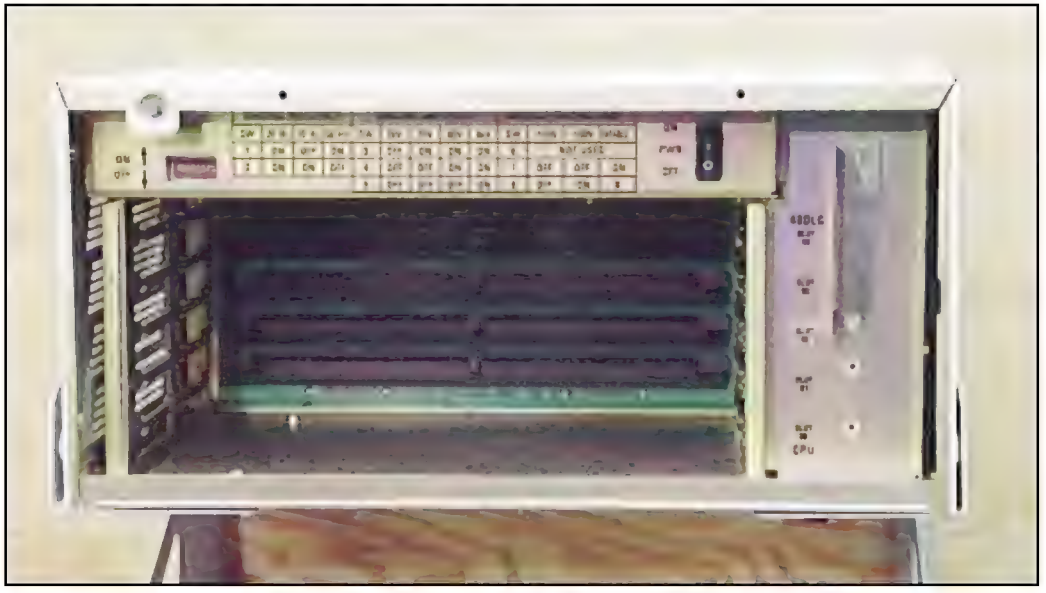
Figure 28
Chassis stops on the wall shelf brackets



6 **Fasten the chassis in position using the four thumb screws, located on the bottom side of the shelf brackets.**

7 **Tighten the eight #12 wood screws into the plywood backboard. Make sure that the shelf brackets and chassis are fastened securely in position. See Figure 29.**

Figure 29
Chassis installed on a wall in a horizontal position



8 **If you want to install a Chassis Expander on a wall in a horizontal position, repeat the above steps for the Chassis Expander.** Refer to the equipment layout plan for the measurements and where to position the Chassis Expander.

End of Procedure

Installing the chassis on a table

Items required

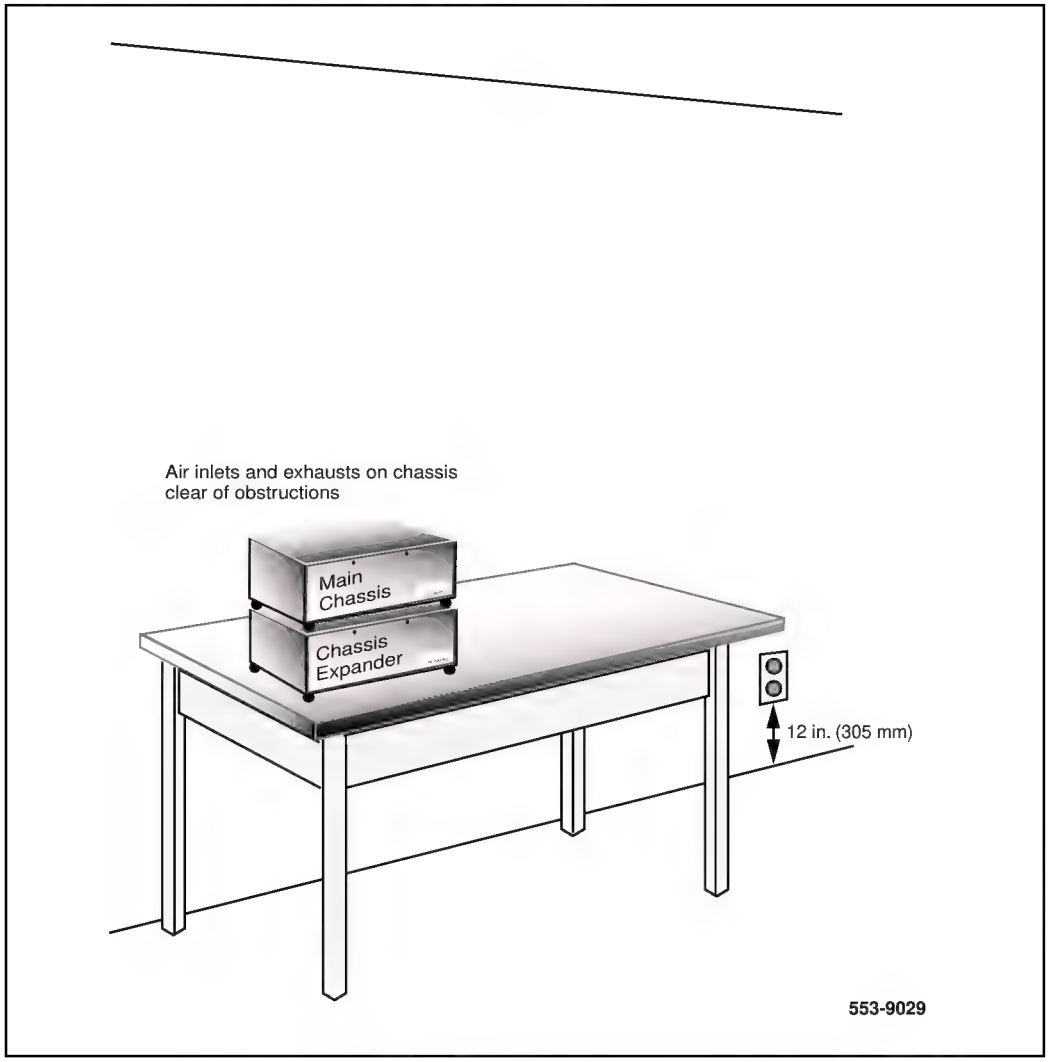
To install the chassis on a table, you require the following items:

- equipment layout plan
- four rubber feet
- four #8-32 machine screws

The NTTK10 kit contains all of the above items, with the exception of the equipment layout plan.

Refer to Figure 30 for guidelines on how to position system components.

Figure 30
Typical layout for installing the chassis on a table



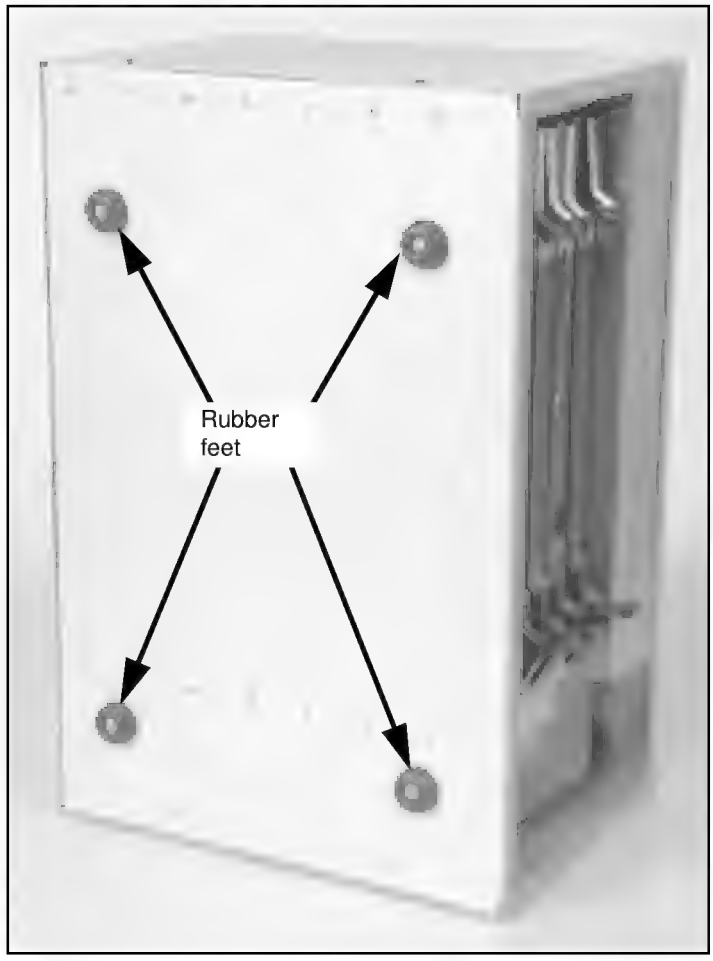
Note: Leave wall space for the cross-connect terminal.

Procedure 4
Installing the Option 11C Mini chassis on a table

1 **Place the chassis upside down on a horizontal work surface.**

2 **Fasten the four rubber feet securely to the bottom of the chassis using the machine screws. See Figure 31.**

Figure 31
Chassis with rubber feet installed



3 **Place the chassis right side up on the rubber feet.**

4 **Position the chassis so that the air inlets and exhausts are free from any obstructions. Also, you must have access to the front of the chassis.**

> **CAUTION**
> Do not place the chassis on the floor. The inlets can take in dust that can cause harm to the system.

5 **If you want to add a Chassis Expander, follow the above steps to place the rubber feet on the Chassis Expander.**

Note: You can place the Main Chassis directly on top of the Chassis Expander. Refer to the equipment layout plan.

End of Procedure

Installing the chassis in a 19 inch rack/cabinet

Items required

To install the chassis in a 19 inch rack/cabinet, you require the following items:

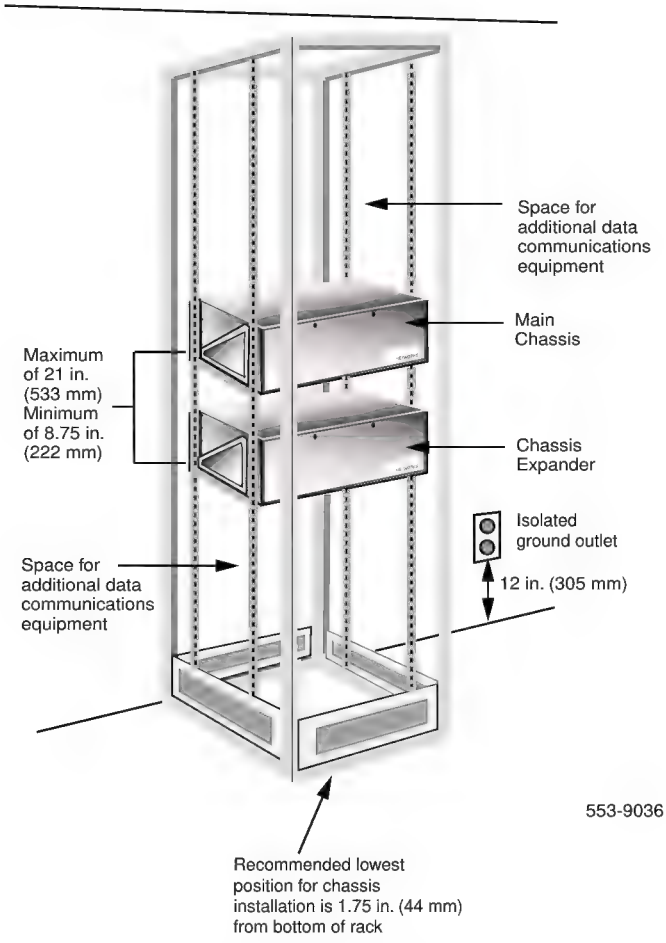
- equipment layout plan
- one left chassis guide bracket
- one right chassis guide bracket
- one left ear bracket
- one right ear bracket
- eight #12-24 self-tapping screws
- four #8-32 machine screws

The NTTK09 contains all of the above items, with the exception of the equipment layout plan.

Note: The Option 11C Mini system does not include the 19 inch rack/cabinet.

Refer to Figure 32 on page 130 for guidelines on how to position system components.

Figure 32
Typical layout for installing the chassis in a rack/cabinet


Space for additional data communications equipment
Main Chassis
Maximum of 21 in. (533 mm) Minimum of 8.75 in. (222 mm)
Chassis Expander
Isolated ground outlet
12 in. (305 mm)
Space for additional data communications equipment
553-9036
Recommended lowest position for chassis installation is 1.75 in. (44 mm) from bottom of rack

Note 1: Leave wall space for the cross-connect terminal.

Note 2: The rack/cabinet does not have to be right against the wall. You can position the rack/cabinet so that you have access to both the front and back.

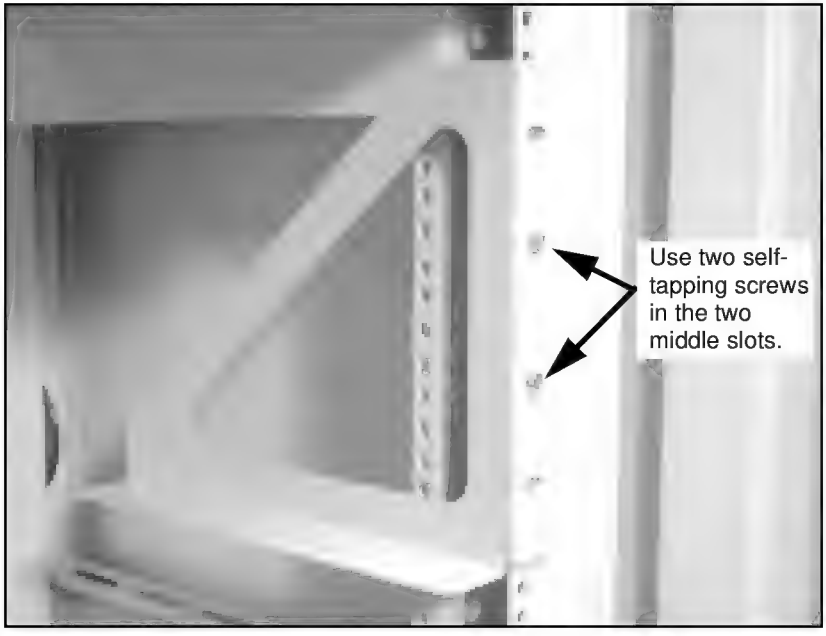
Procedure 5
Installing the Option 11C Mini chassis in a 19 inch rack/cabinet

1 **Fasten the left chassis guide bracket to the left rack/cabinet support.** Insert two #12-24 self-tapping screws into the two middle slots in the chassis guide bracket and into the respective holes in the left rack/cabinet support. Fasten the screws.

Note: The rack/cabinet brackets help guide the chassis into place, and allow one person to install the chassis in the rack/cabinet.

2 **Fasten the right chassis guide bracket to the right rack/cabinet support.** Insert two #12-24 self-tapping screws into the two middle slots in the bracket and into the respective holes in the right rack/cabinet support. Fasten the screws. See Figure 33.

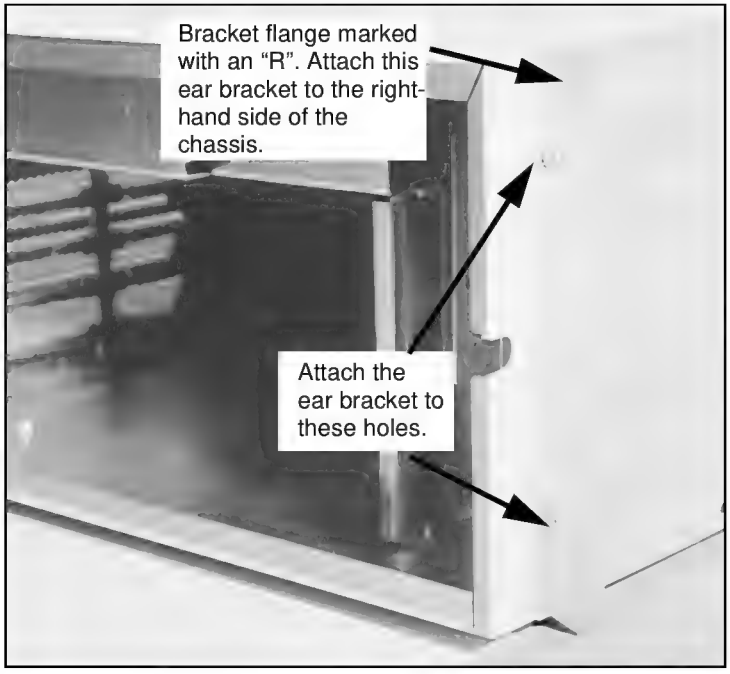
Figure 33
Chassis guide bracket installed in a rack



3 **Attach the left ear bracket (marked with an "L") to the holes on the left side of the chassis (near the front).**
Use two #8-32 machine screws. Position the ear bracket so that the four holes on the bracket flange are nearer to the back of the chassis. To determine the front of the bracket, locate the "L". This "L" must be at the top of the bracket and must face to the front of the chassis.

4 **Attach the right ear bracket (marked with an "R") to the holes on the right side of the chassis.**
Use two #8-32 machine screws. Position the ear bracket so that the four holes on the bracket flange are nearer to the back of the chassis. To determine the front of the bracket, locate the "R". This "R" must be at the top of the bracket and must face to the front of the chassis. See Figure 34.

Figure 34
Right ear bracket installed on the chassis


Bracket flange marked with an "R". Attach this ear bracket to the right-hand side of the chassis.
Attach the ear bracket to these holes.

5 **Place the chassis on the chassis guide brackets.**
Carefully slide the chassis into the rack/cabinet until the ear brackets come to rest against the rack/cabinet support.

6 **Use the four remaining #12-24 self-tapping screws to fasten the chassis to the rack/cabinet supports (two screws on each side).** Make sure that the back of the chassis is on the chassis guide brackets. See Figure 35

Figure 35
Chassis installed in a rack/cabinet

7 **If you want to add a Chassis Expander, follow the above steps.** You only need to leave a small space between the Main Chassis and the Chassis Expander. The air circulates from the side of the chassis. To install the Chassis Expander, start in the next 5u pattern of mounting holes. This results in the Chassis Expander being approximately 1/4 inch from the first chassis.

Note: In the 5u pattern, a "u" is equal to 1.75 in. and includes three holes spaced at 5/8 in. + 5/8 in. + 1/2 in.

Note: In addition to more Option 11C Mini chassis, you can install other Data Communications Equipment in a rack/cabinet with the Option 11C Mini. Refer to "Grounding multiple pieces of equipment in a rack/cabinet" on page 144 for grounding instructions for multiple pieces of equipment in a rack/cabinet.

End of Procedure

Chapter 10 — Connecting the Chassis Expander to the Main Chassis

This chapter describes how to add a Chassis Expander to your Option 11C Mini system. Use the same methods described in "Chapter 9 — Installing the chassis" on page 115 to install the Chassis Expander. Refer to "Chapter 4 — Creating an equipment layout plan and a card slot assignment plan" on page 69 for measurements and distances between the Main Chassis and the Chassis Expander.

This chapter contains the following procedure:

- Procedure 6: "Adding a Chassis Expander" on page 135

The Chassis Expander connects to the Main Chassis by two copper cables: one provides DS-30X connectivity and the other provides CE-MUX connectivity to slot 10 only.

Procedure 6
Adding a Chassis Expander

1 **Install the Chassis Expander following the procedures in "Chapter 9 — Installing the chassis" on page 115.**

2 **Connect one of the NTDK95 cables from the CE-MUX connector on the back of the Main Chassis to the CE-MUX connector on the back of the Chassis Expander.**

3 **Tighten the screws on the connectors.**

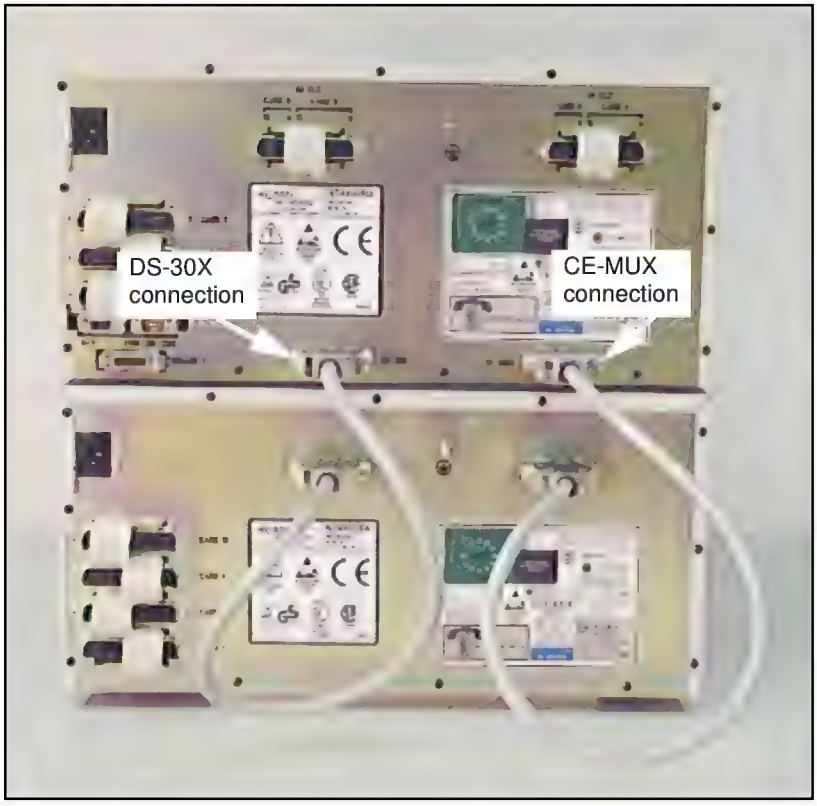
4 **Connect the other NTDK95 cable from the DS-30X connector on the back of the Main Chassis to the DS-30X connector on the back of the Chassis Expander.**

5 **Tighten the screws on the connectors.**

Note: The expansion cable kit (NTDK89) contains two NTDK95 cables.

Figure 36 shows the Main Chassis and Chassis Expander connected with the two NTDK95 cables.

Figure 36
The Main and Expander chassis connected with the two NTDK95 CE-MUX/DS-30X bus cables



6 **Install the system ground as described in "Chapter 11 – Installing the system ground" on page 139.**

7 **Add circuit cards as described in "Chapter 12 — Installing the circuit cards" on page 147.**

8 **Follow the procedures for starting the Option 11C Mini in "Chapter 16 — Starting the Option 11C Mini and installing software" on page 209**.

End of Procedure

Chapter 11 – Installing the system ground

This chapter describes how to ground the Option 11C Mini chassis. This chapter contains the following procedures:

- Procedure 7: "Grounding the Option 11C Mini chassis" on page 141
- Procedure 8: "UK grounding procedure for the Option 11C Mini chassis" on page 144

This chapter also describes how to ground multiple pieces of equipment in a rack/cabinet when one or more pieces of equipment does not have a grounding lug. See "Grounding multiple pieces of equipment in a rack/cabinet" on page 144.

Refer to the "Grounding requirements" on page 47 for additional information.

WARNING

Correct grounding is very important. Failure to complete the grounding procedures may result in a system that is unsafe for the personnel using the equipment. If your system is not grounded correctly, it may not be protected from lighting or power surges, and it may be subject to service interruptions.

You must use insulated ground wire for system grounding.

Chassis powered by the same service panel

For each Main Chassis, connect a #6 AWG (#40 Metric Wire Gauge) ground wire from the Main Chassis to an NTBK80 grounding block. Connect the grounding block to a ground source (the ground bus in the AC service panel).

Consider the Main Chassis and the Chassis Expander as the same ground. Jumper the ground wire from the Chassis Expander to the Main Chassis. Then, connect the ground wire from the Main Chassis to the grounding block.

See Table 26 for region-specific grounding requirements.

Chassis powered by different service panels

For each Main Chassis, connect a #6 AWG (#40 Metric Wire Gauge) ground wire from the Main Chassis to an NTBK80 grounding block. If any chassis cannot be powered from the same service panel, ground it separately from the other chassis back to the service panel that supplies it. All Main Chassis and Chassis Expander pairs must be powered from the same service panel.

See Table 26 for region-specific grounding requirements.

Table 26
Region-specific grounding wire requirements

Region	Grounding wire requirements
Germany	#8 AWG (10 mm^2) green/yellow wire
Other regions in Europe	not smaller than #6 AWG (16 mm^2) at any point
UK	two green/yellow wires no thinner than two 10 mm^2

Chassis grounding instructions

Procedure 7 describes how to ground the Option 11C Mini Main Chassis and Chassis Expander. Repeat the steps for each Main Chassis and Chassis Expander installed in the system.

Procedure 7
Grounding the Option 11C Mini chassis

1 **Make sure that you disconnect the AC power cord from the power outlet.**

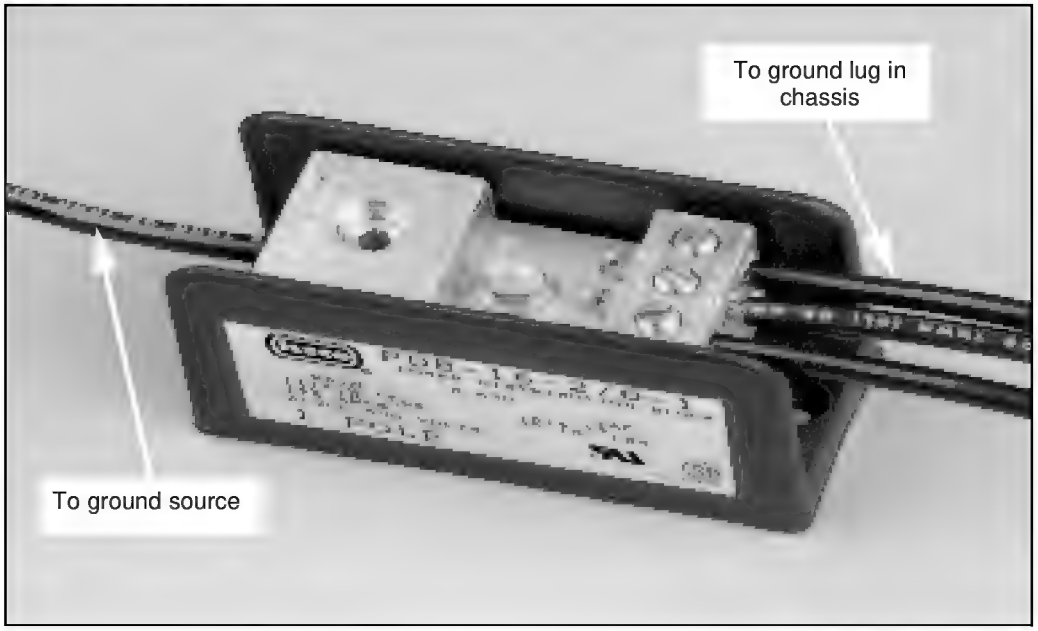
Note: For rack/cabinet configurations, equipment must be powered from the same service panel.

WARNING
Never connect power to a chassis that is not grounded correctly.

2 **Install an NTBK80 grounding block near the chassis. See Figure 37.**

Note: Use the grounding block as a bridging point for ground wires from up to six nearby Option 11C Mini Main Chassis and Chassis Expander pairs. If you have additional chassis, you require additional grounding blocks.

Figure 37
NTBK80 ground block

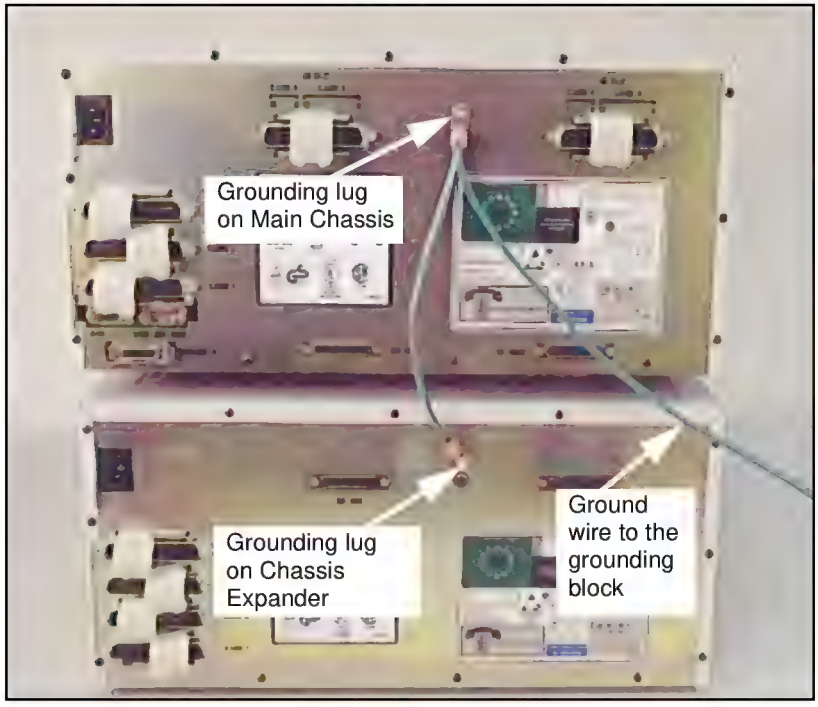


3 **Consider each Main Chassis and Chassis Expander pair as one ground. Jumper the Chassis Expander ground to the Main Chassis ground. See Figure 38.**

4 **Install a #6 AWG (#40 Metric Wire Gauge) ground wire from the ground lug on the back of the Main Chassis to the NTBK80 grounding block.** See **Figure 38**.

Place a DO NOT DISCONNECT tag on the ground wire.

Figure 38
Grounding a Main Chassis and Chassis Expander pair



5 Connect the grounding block to the ground bus in the AC power service panel, using #6 AWG wire. See Table 26 on page 140 for region-specific grounding requirements.

WARNING
A qualified technician or electrician must make the connection in the AC power service panel.

6 Place a DO NOT DISCONNECT tag on the ground wire at the service panel.

7 Test the ground.

End of Procedure

Procedure 8
UK grounding procedure for the Option 11C Mini chassis

1 **Connect a protective and functional ground wire from the grounding strip on the Krone Test Jack Frame to the ground at the building entry point.**

Use a green/yellow wire no thinner than 10 mm^2.

2 **In each chassis, connect a ground wire from the ground lug in the chassis to the ground connection at the Test Jack Frame.**

Use a green/yellow wire no thinner than 10 mm^2. Place a DO NOT DISCONNECT tag on the grounding wire.

3 **Measure the resistance of the ground between the Krone Test Jack Frame and the Main Chassis frame ground.**

The resistance must not be more than $0.25^{3/4}$ at 30 amperes.

End of Procedure

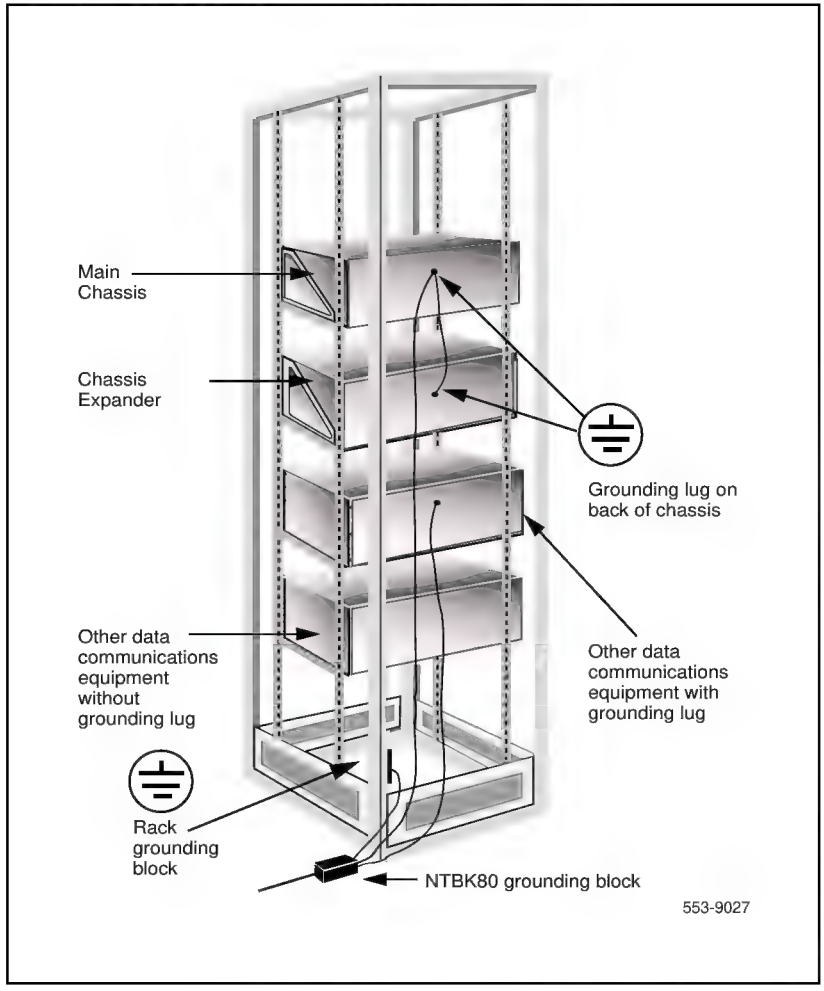
Grounding multiple pieces of equipment in a rack/cabinet

For multiple pieces of equipment installed in a rack/cabinet, make a separate ground connection from each piece of equipment to the NTBK80 grounding block. Consider each Main Chassis and Chassis Expander pair, however, as one ground. Jumper the Chassis Expander ground to the Main Chassis ground. See Figure 39.

If a piece of Data Communications Equipment installed in a rack/cabinet does not have a grounding lug, ground the rack to the NTBK80 grounding block. See Figure 39.

When you ground the rack to the grounding block, the equipment is grounded using the Single Point Grounding method, as shown in Figure 6 on page 52.

Figure 39
Grounding multiple pieces of equipment in a rack



Chapter 12 — Installing the circuit cards

This chapter describes how and where to install circuit cards used in the Option 11C Mini system. This chapter is divided into the following main sections:

- "Circuit cards required for the Option 11C Mini" on page 151. This section describes the installation of the NTDK97 MSC card and the NTDK16 48-port Digital Line Card. These cards are required for the Option 11C Mini system. The following procedures describe how to install the NTDK97 and the NTDK16:
  - — Procedure 9: "NTDK97 MSC installation" on page 153
  - — Procedure 10: "NTDK16 48-port Digital Line Card installation" on page 156
- "Optional circuit cards" on page 156. This section describes the circuit cards that are optional to the Option 11C Mini system.

Refer to "Card slot assignments" on page 77 for additional information on where to place circuit cards.

Refer to the *Intelligent Peripheral Equipment Circuit Card Supplements for* full descriptions of country-specific IPE cards and their installation procedures.

CAUTION

Always handle circuit cards with caution to avoid damage caused by static electricity. Always store circuit cards that are not in use in an antistatic bag or the original packaging

Wear an antistatic wrist strap, such as the one shown in Figure 40, when handling circuit cards. Static electricity can damage circuit card components.

Figure 40
Antistatic wrist strap

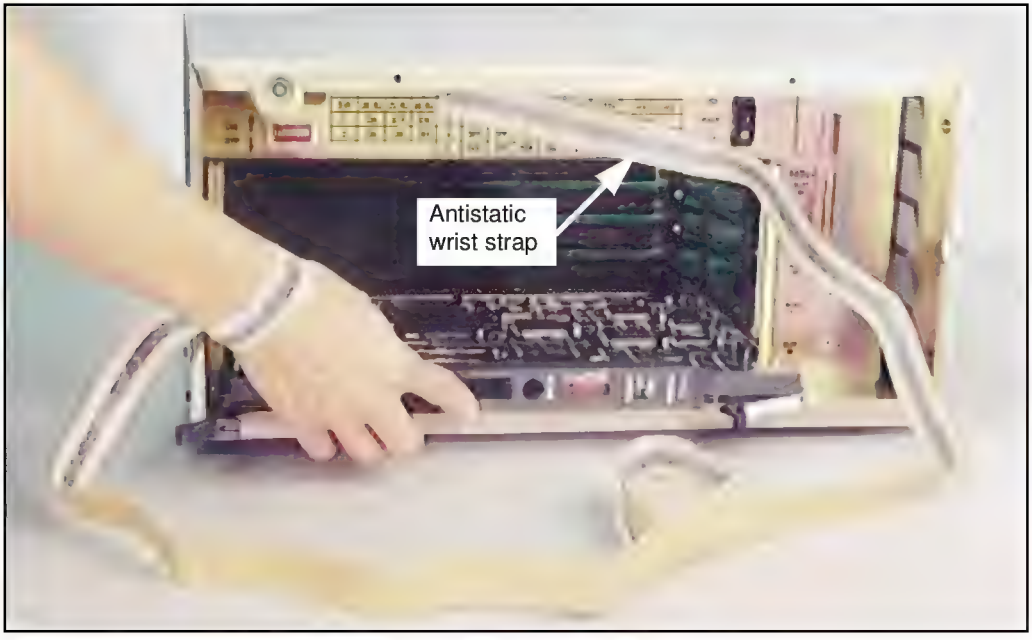
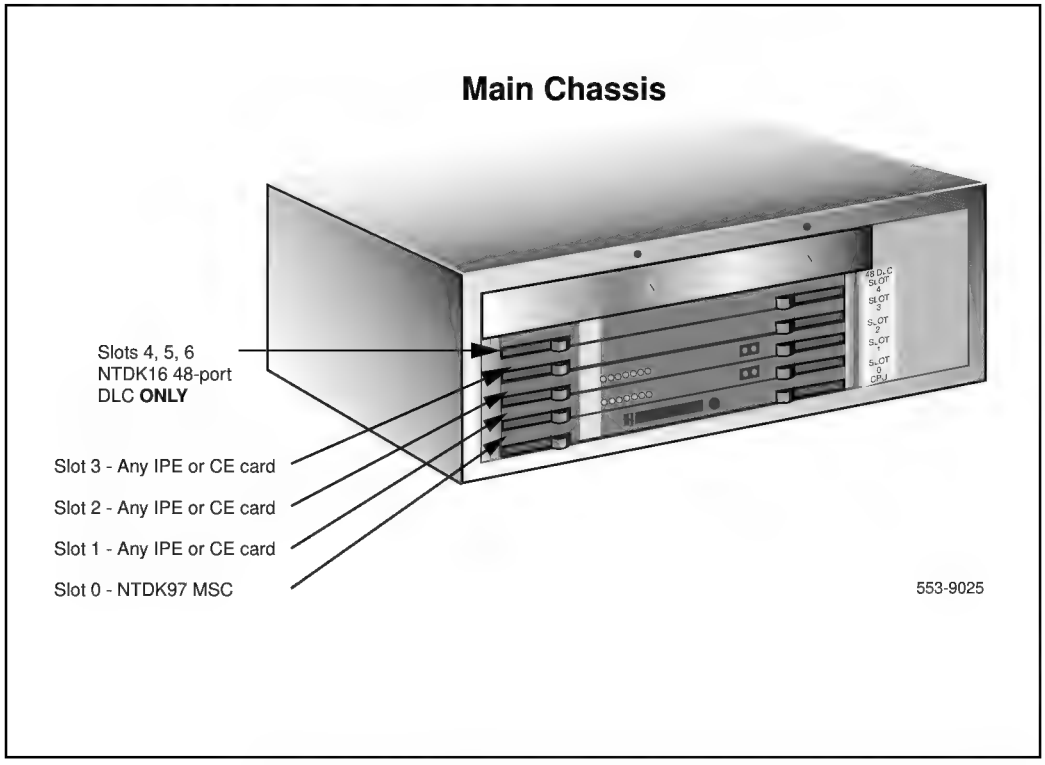


Figure 41 on page 149 and Figure 42 on page 150 show the circuit card assignments for the Main Chassis and Chassis Expander. Follow these diagrams to make sure that you have all circuit cards inserted in the correct slots.

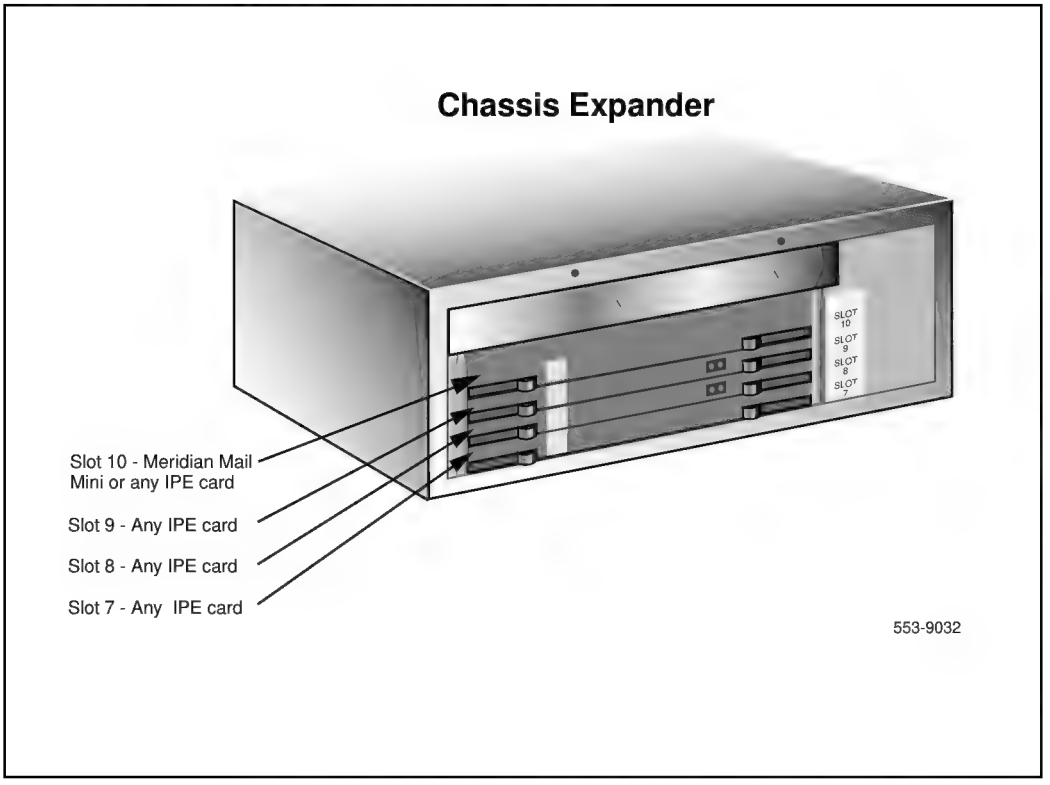
Figure 41
Circuit card assignments in the Main Chassis


Main Chassis
Slots 4, 5, 6
NTDK16 48-port
DLC **ONLY**
Slot 3 - Any IPE or CE card
Slot 2 - Any IPE or CE card
Slot 1 - Any IPE or CE card
Slot 0 - NTDK97 MSC
553-9025

Note 1: See Table 18 on page 78 for the cards that you can insert in the Main Chassis.

Note 2: Slot 4 accepts the NTDK16 48-port DLC card only. However, you can place a double-width card in slot 3 and it can overlap into slot 4.

Figure 42
Circuit card assignments in the Chassis Expander



Note 1: See Table 18 on page 78 for the cards that you can insert in the Chassis Expander.

Note 2: To configure Meridian Mail Mini, you must place the Meridian Mail card in slot 10 of the Chassis Expander. The size of Slot 10 is double that of the other slots in the chassis. Slot 10 supports Meridian Mail and other application cards that require a double slot.

Circuit cards required for the Option 11C Mini

If a circuit card has a symbol of a switch on its faceplate, it is equipped with option switches, strapping plugs, or both. Make sure that the circuit cards with option switches or strapping plugs are set correctly. Some circuit cards can have daughterboards and other add-on devices installed on them.

The Option 11C Mini system supports the circuit cards described in this section. You can find a complete list of circuit cards requiring settings in the *Circuit Card Installation and Testing (553-3001-211)* document.

NTDK97 Mini System Controller (MSC) card

The NTDK97 MSC card is based on the Option 11C NTDK20 Small System Controller (SSC) card. Memory is integrated on the CPU. The MSC card does not require a separate daughterboard. The MSC card runs X11 global software and supports all of the NTDK20 SSC functionality with the following differences:

- Reduced conference capability: The MSC card provides 16 channels of conferencing with a maximum of six participants per conference call on conference loop 29. The conference capability allows for up to five simultaneous three-party conferences and up to two simultaneous six-party conferences. Conference loop 30 is disabled.
- Supports 10 logical slot addresses
- Faceplate: This card does not support fiber-optic daughterboards. The LEDs at the bottom of the faceplate show the Ethernet port link status and collision status.
- Supports one NTDK92 Chassis Expander

You must install the MSC card in Slot 0 of the Main Chassis.

Security Device

The MSC card is equipped with a socket designed to hold the Security Device. The Security Device is shipped with each new Option 11C Mini system. When the MSC card is shipped, the Security Device is normally not attached to the socket on the MSC card. You must attach the Security Device to the MSC card during initial installation.

PCMCIA interface

The NTDK97 MSC card has a 2-slot PCMCIA interface socket located on its faceplate. You can insert a Software Delivery card into the socket. Use the Software Delivery card for software upgrades on an existing Option 11C Mini system. You can also use the PCMCIA socket for creating an external backup copy of the customer database.

SDI ports

The NTDK97 MSC card contains three SDI ports used to connect on-site terminals or remote terminals through a modem. See Table 27 for the default settings on the ports.

Table 27
SDI port default settings

TTY Port	Baud rate	Data bits	Stop bits	Parity
0	Set by a DIP switch	8	1	None
1	1200 (See Note below)	8	1	None
2	1200 (See Note below)	8	1	None
Note: The baud rate shown for ports 1 and 2 is the default rate. You can configure ports 1 and 2 in software to a maximum baud rate of 19200 bps.				

Ethernet interface

The NTDK97 MSC card has a 10 Mbit ethernet port. The 15-pin connector, located on the back of the Main Chassis, provides external connection to the ethernet port. This connector is for a standard 15-pin AUI interface for a MAU.

Digitone Receiver, tone generation, tone detection functions

The NTDK97 MSC card provides the following Digitone and other tone functions related to tone:

- 30 channels of Tone and Digit Switch (TDS) and a combination of eight Digitone Receivers (DTR) or Dial Tone Detectors (XTD)
- Tone service ports, which can be configured as either four units of MFC/MFE/MFK5/MFK6/MFR or eight DTR/XTD units

If you require additional tone receiver and transmission resources over and above those provided on the MSC card, install an NTAK03 TDS/DTR card.

Procedure 9
NTDK97 MSC installation

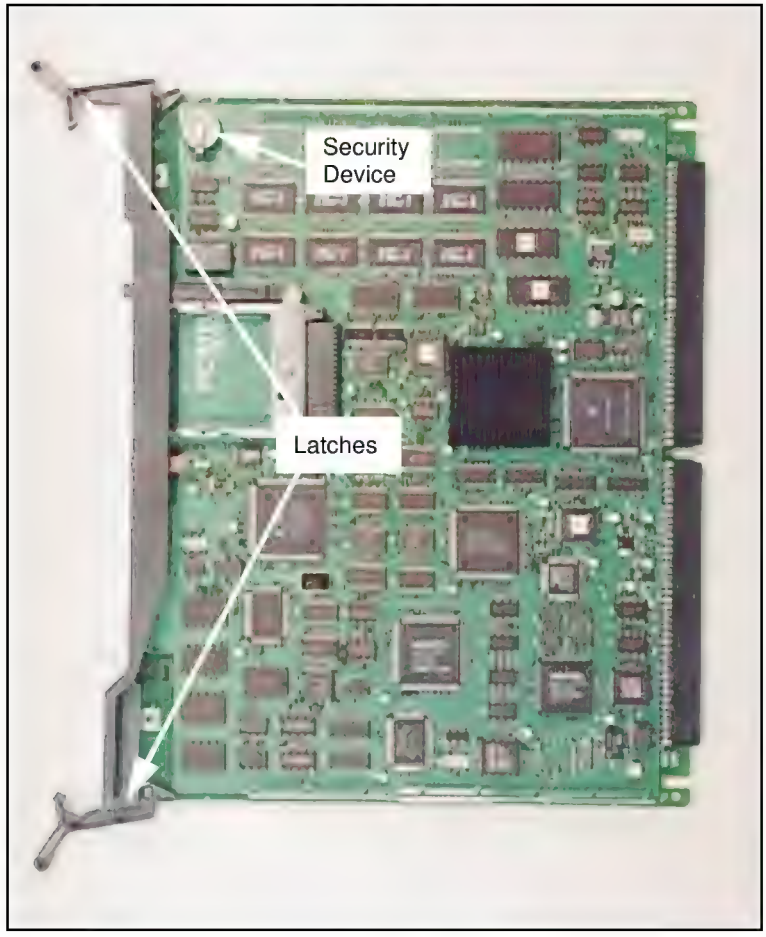
1 **Put on an antistatic wrist strap.**

2 **Install the Security Device on the MSC card.**
Insert the Security Device in the socket on the component side of the MSC card. See Figure 43.

CAUTION

The NTDK97 MSC card has components on both sides of the circuit card. Be careful not to damage any of the components when you handle the card.

Figure 43
MSC card with the security device installed



3 **Insert the NTDK97 MSC card in the CPU slot (slot 0) of the Main Chassis.**

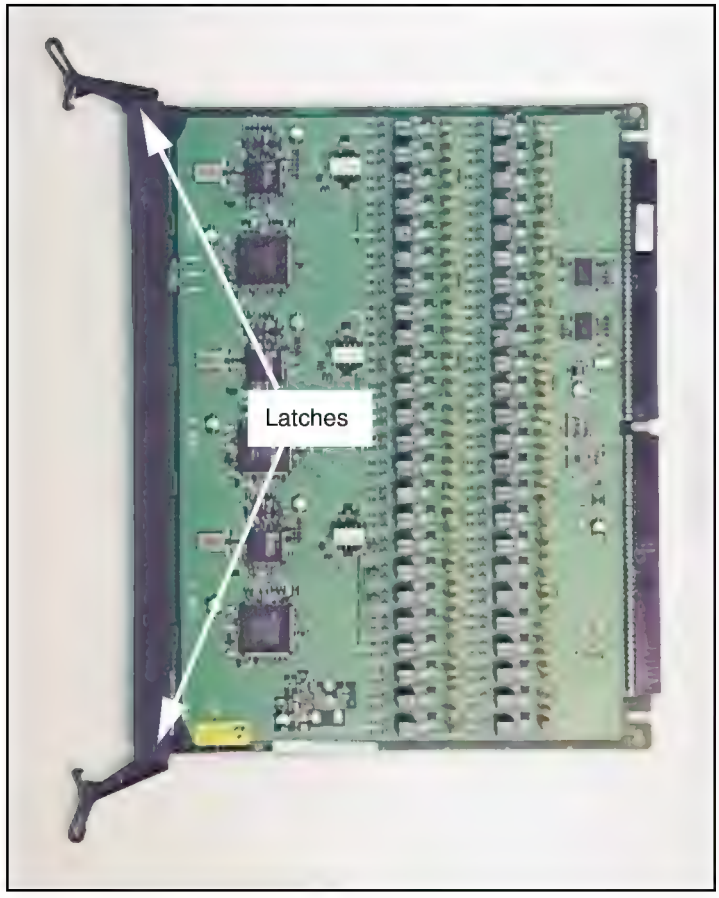
4 **Lock the latches on the card.**

End of Procedure

NTDK16 48-port Digital Line Card

The NTDK16 48-port Digital Line Card provides an interface to a maximum of 48 digital integrated voice and data sets. The NTDK16 Digital Line Card is functionally equivalent to three NT8D02 Digital Line Cards. See Figure 44.

Figure 44
48-port Digital Line Card



Note 1: You can only place the NTDK16 Digital Line Card in slot 4 of the Main Chassis.

Note 2: The Option 11C Mini system does not require the NTDK16 Digital Line Card to operate.

Procedure 10
NTDK16 48-port Digital Line Card installation

1 Insert the NTDK16 card in Slot 4 of the Main Chassis.

2 Lock the latches on the card.

Note 1: The NTDK16 provides three independent loops (loops 4, 5, and 6). When the time comes to program this card in software, configure it as cards 4, 5, and 6 separately.

Note 2: Three LEDs provide card status.

Note 3: The NTDK16BA version of this card is not compatible with the NTDK91AA and the NTDK91AB Main Chassis.

End of Procedure

Optional circuit cards

NT8D14 Universal Trunk card

The NT8D14 Universal Trunk card provides eight analog trunks which can function in the modes shown in Table 28.

You can install this line card in slots 1 through 3 in the Main Chassis or slots 7 through 10 in the Chassis Expander.

Procedure 11
Universal Trunk card installation

1 Set the jumpers for the NT8D14 Universal Trunk circuit card according to Table 28.

Table 28
NT8D14 Universal trunk — modes and option settings

Modes	Location	Jumper strap
Central (CO)	J1, J2	OFF
2-way TIE trunk (loop Dial Repeat)	J1, J2	OFF
2-way TIE trunk (Outgoing Incoming Dial)	J1, J2	OFF
Recorded Announcement (RAN)	J1, J2	OFF
Paging trunk	J1, J2	OFF
Japan CO/DID operation	J1, J2	OFF
DID operation Loop length>2000 ¾	J1, J2	ON
DID operation Loop length <2000¾	J1, J2	OFF
Note: OFF indicates no strap present. J1 and J2 locations apply to all eight trunks.		

2 Insert the card in its assigned slot.

End of Procedure

NT8D15 E&M Trunk card

The E&M trunk card provides four trunks which can function as 2W E&M, 4W E&M, and Paging.

You can install this card in slots 1 through 3 in the Main Chassis, or in slots 7 through 10 in the Chassis Expander.

Procedure 12
E&M Trunk card installation

1 Set the switches for the NT8D15 E&M trunk circuit card according to Table 29.

Table 29
NT8D15 E&M Trunk card option settings

Mode of operation	J2	J9
4W — Type 1	ON	connect pins 2 - 3
4W — Type 2	ON	connect pins 2 - 3
2W — Type 1	ON	connect pins 2 - 3
Paging trunk	ON	connect pins 2 - 3

2 Insert the card in its assigned slot.

End of Procedure

NT8D02 Digital Line Card

The NTDK16 48-port Digital Line Card is functionally equivalent to three NT8DO2 Digital Line Cards. However, the Option 11C Mini system also supports the NT8D02 Digital Line Card.

You can install this circuit card in slots 1 to 3 of the Main Chassis or slots 7 to 10 of the Chassis Expander.

Procedure 13
NT8D02 circuit card installation

1 Insert the circuit card in slots 1 to 3 of the Main Chassis or in slots 7 to 10 of the Chassis Expander.

End of Procedure

NTAK02 SDI/DCH card

The NTDK97 MSC card includes the functionality of the NTAK02 card. However, if you require additional resources, you can use the NTAK02 card with the NTDK97 card. Before inserting the NTAK02 SDI/DCH card into its slot, you must set the switches and attach the jumper plugs.

Note: Install this circuit card in the Main Chassis only.

The NTAK02 SDI/DCH switches allow you to configure the four SDI ports as a combination of the following:

- SDI

- ESDI
- DCH/DPNSS

The NTAK02 SDI/DCH card uses jumper plugs to configure the RS232/RS422 interfaces as one of the following:

- DTE
- DCE

Procedure 14
NTAK02 circuit card installation

1 Set the switches and jumper plugs for the NTAK02 SDI/DCH card according to Tables 30 to 32.

Table 30
Switch settings (Ports 0 and 1)

Port 0	Port 1	SW 1-1	SW 1-2
SDI	DCH	OFF	OFF
SDI	DPNSS	OFF	ON
—	ESDI	ON	ON

Table 31
Switch settings (Ports 2 and 3)

Port 2	Port 3	SW 1-3	SW 1-4
SDI	DCH	OFF	OFF
SDI	DPNSS	OFF	ON
—	ESDI	ON	ON

Table 32
Jumper settings

Port	Jumper location	Strap for DTE	Strap for DCE	Jumper location	RS422	RS232
Port 0	J10	C - B	B - A			
Port 1	J7 J6	C - B C - B	B - A B - A	J9 J8	C - B C - B	B - A B - A
Port 2	J5	C - B	B - A			
Port 3	J4 J3	C - B C - B	B - A B - A	J2 J1	C - B C - B	B - A B - A

2 **Insert the card in its assigned slot.**

You can install the NTAK02 SDI/DCH card in slots 1 to 3 of the Main Chassis.

3 **Connect an NTAK19FB four port cable (or an NE-A25-B cable) from the corresponding connector at the back of the chassis. If you use an NE-A25-B cable, terminate this cable at the cross-connect terminal. Because the NTAK19FB cable is equipped with connectors, it does not require termination at the cross-connect terminal.**

NTAK03 TDS/DTR card

The NTDK97 MSC card provides the NTAK03 TDS/DTR card functionality. However, the TDS/DTR card can exist with the MSC card if you want to access additional TDS/DTR units. You must program these functions in the software overlays.

Note: At times the system does not operate correctly if you install an NTAK03 circuit card in a slot connected to telephones. Refer to "Chapter 13 — Installing and connecting the cross-connect terminal" on page 169 to connect an NTAK03 circuit card to the cross-connect terminal.

Procedure 15
NTAK03 card installation

1 **Insert the card in its assigned slot.**

You can insert the NTAK03 TDS/DTR card into card slots 1 to 3 of the Main Chassis.

2 **Connect an NTAK19EC cable (or an NE-A25-B cable) from the corresponding connector at the back of the chassis. If you are using an NE-A25-B cable, terminate this cable at the cross-connect terminal. Because the NTAK19EC cable is equipped with connectors, it does have to be terminated at the cross-connect terminal.**

End of Procedure

NTAG26 XMFR card

The NTDK97 MSC card provides the functionality of the Extended Multi-frequency Receiver (XMFR) card. However, this card can exist with the MSC card if you want to access additional XMFR capability.

The XMFR card receives MF digit information. Connections are made between a PBX and a CO. The Option 11C Mini supports features, such as Automatic Number Identification (ANI), Meridian 911 (M911), and Feature Group D (FGD), through the IPE MF Receiver.

Procedure 16
XMFR card installation

1 **Insert the NTAG26 card in its assigned slot.**

You can install the NTAG26 card in slots 1 through 3 of the Main Chassis or slots 7 through 10 of the Chassis Expander.

Note: After the card is enabled, the LED flashes three times to indicate it is conducting a self-test. If the LED remains lit, the self-test has failed.

End of Procedure

NT5K21 XMFC card

The NTDK97 MSC card provides the functionality of the Extended Multi-frequency Compelled Sender/Receiver (XMFC) card. However, this card can still be used if you wish to access additional XMFC capability.

The XMFC card provides four channels of R2 Standard signaling capability.

Procedure 17
XMFC card installation

1 Insert the NT5K21 card in its assigned slot.

You can install this card in slots 1 through 3 in the Main Chassis or slots 7 through 10 in the Chassis Expander.

Note: After the card is enabled, the LED flashes three times to indicate it is conducting a self-test. If the LED remains lit, the self-test has failed.

End of Procedure

NT1R20 Off-Premise Station (OPS) analog line card

The OPS analog line card provides eight OPS lines. You can install this card in slots 1 through 3 in the Main Chassis or slots 7 through 10 in the Chassis Expander.

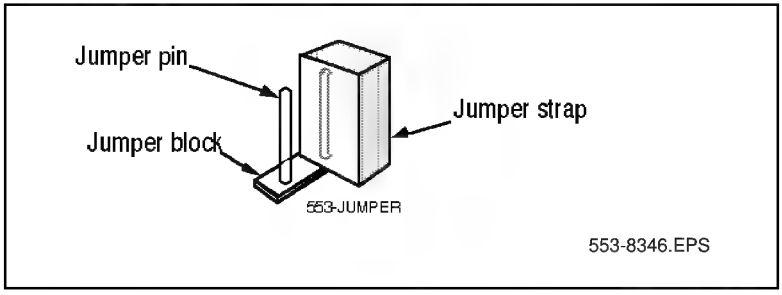
Procedure 18
OPS analog line card installation

1 Set the jumpers on the NT1R20 OPS card.

Each line interface unit on the card has two jumper blocks that are used to select the proper loop current, depending on loop length. See Table 33 on page 165 and Figure 46 on page 166.

For units connected to loops of 460 to 2300 ¾, both jumper blocks for that unit must have jumper straps installed. For loops that are 460 ¾ or less, jumper straps are not installed.

Figure 45
Set the jumpers



2 Insert the OPS card in its assigned slot.

3 Cross connect off-premise telephones as described in "Connecting off-premise telephones" on page 235.

Refer to Figure 47 on page 167 for cross connection information for the OPS card.

End of Procedure

Table 33 provides OPS analog line card configuration information.

Table 33
OPS analog line card configuration

Application	On-premise station (ONS)			Off-premise station (OPS)			
Class of service (Note 1)	ONS			OPS			
Loop resistance	0 - 460 ohms			0 - 2300 ohms			
Jumper strap setting (See Note 6)	Both JX. 0 and JX.1 off			Both JX. 0 and JX. 1 off		Both JX. 0 and JX. 1 on	
Loop loss dB (See Note 3)	0-1.5	>1.5-2.5	2.5-3.0	0-1.5	1.5-2.5	2.5-3.0	4.5-15
TIMP (See Notes 1, 4)	600¾	600¾	600¾	600¾	600¾	600¾	600¾
BIMP (See Notes 1, 4)	600¾	3COM1	3COM2	600¾	3COM1	3COM2	3COM2
Gain treatment (See Note 5)	No						Yes

Note 1: Configured in the Single line Telephone Administration program (LD 10).
Note 2: The maximum signaling range supported by the OPS analog line card is 2300 ohms.
Note 3: Loss of untreated (no gain devices) metallic line facility. Upper loss limits correspond to loop resistance ranges for 26 AWG wire.
Note 4: Default software impedance settings are:

ONS	CLS	OPS	CLS
TIMP:	600 ohms	600 ohms	
BIMP:	600 ohms	3COM2	

Note 5: Gain treatment, such as a voice frequency repeater (VFR), is required to limit the actual OPS loop loss to 4.5 dB, maximum. VFR treatment of metallic loops having untreated loss greater than 15dB (equivalent to a maximum signaling range of 2300 ohms on 26 AWG wire) is not recommended.
Note 6: Jumper strap settings JX> 0 and JX. 1 apply to all eight units; "X" indicates the unit number, 0-7. "OFF" indicates that a jumper strap is not installed across both pins on a jumper block. Store straps that are not in use on the OPS analog line card by installing them on a single jumper pin as shown in Figure 46.

Figure 46
OPS analog line card: jumper block locations

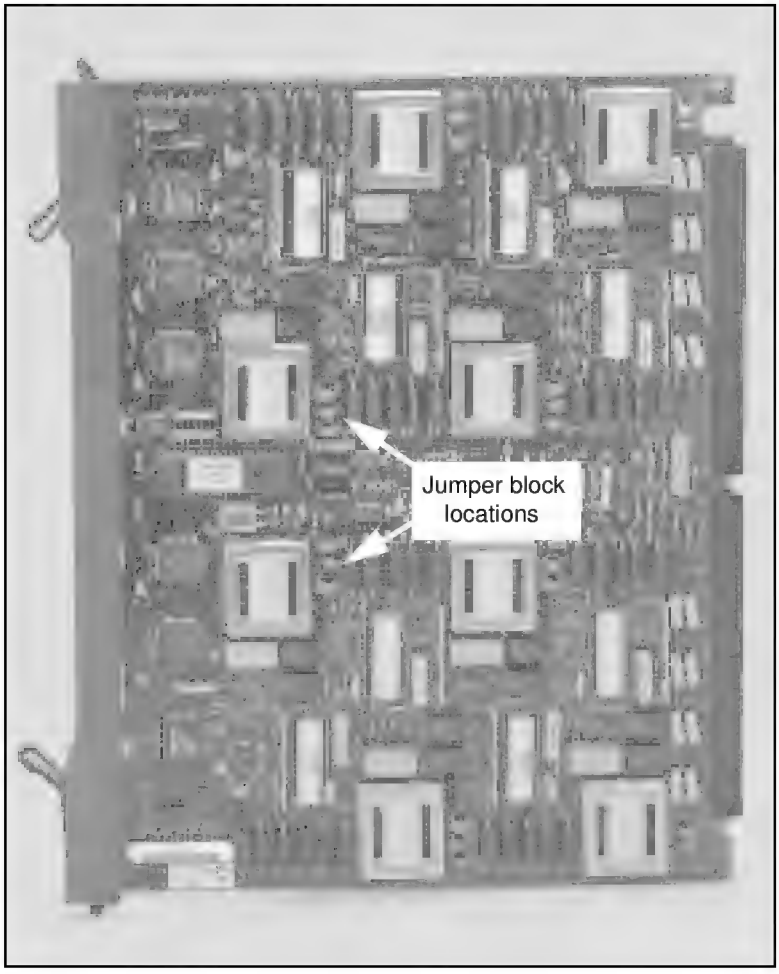
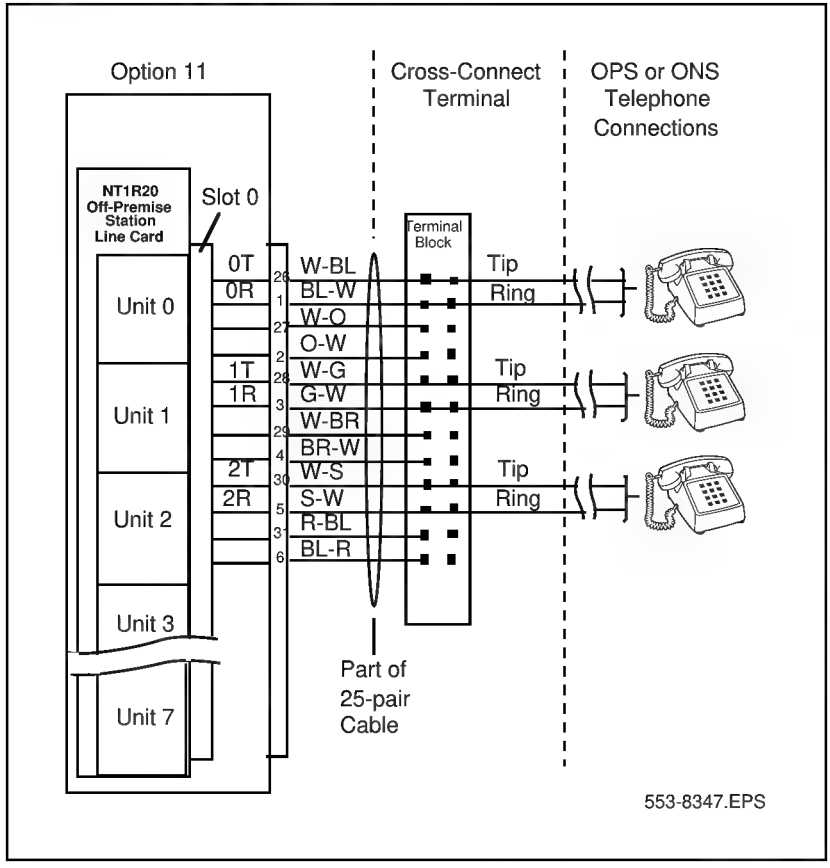


Figure 47
OPS analog line card cross connections



Digital Trunk cards

The Option 11C Mini supports the following digital trunk cards:

- NTAK09 1.5 Mbit DTI/PRI
- NTAK10 2.0 Mbit DTI
- NTAK79 2.0 Mbit PRI
- NTBK22 MISP
- NTBK50 2.0 Mbit PRI

- NTRB21 1.5 Mbit DTI/PRI
- NT6D70 SILC (when used as a clock controller)

Note: The digital trunk cards can be installed only in slots 1-3 of the Main Chassis.

If you want to install digital trunk cards, refer to the following documents for information:

- *1.5 Mbit DTI/PRI Guide (553-3011-310)*
- *2.0 Mbit DTI/PRI Guide (553-3011-315)*
- *ISDN BRI Administration and Maintenance Guide* (553-3011-311)

Chapter 13 — Installing and connecting the cross-connect terminal

This chapter describes how to install and connect an Option 11C Mini system using the BIX, Reichle Masari (Germany), or Krone Test Jack Frame (UK) cross-connect terminals.

This chapter contains the following procedures:

- Procedure 19: "Installing the BIX cross-connect terminal" on page 171
- Procedure 20: "Installing the Reichle Masari cross-connect terminal (Germany)" on page 172
- Procedure 21: "Installing the Krone Test Jack Frame (UK)" on page 176
- Procedure 22: "Connecting the cables" on page 179

Note: The use of the BIX system is not mandatory; however, it is the recommended option.

You can find information about the BIX cross-connect system in the following documents:

- *BIX In-Building Cross-Connect System Material Description (631-4511-100)*
- *BIX In-Building Cross-Connect System Material Installation and Servicing (631-4511-200)*

For information about 1.5 Mbit and 2.0 Mbit DTI/PRI-related wiring and cables, refer to the following documents:

- *Option 11C 1.5Mbit DTI/PRI Administration and Maintenance Guide (553-3011-310)*
- *Option 11C 2.0Mbit DTI/PRI Administration and Maintenance Guide (553-3011-315).*

Terminal block requirements

The cross-connect terminal requires enough connecting blocks to terminate the following wires:

- for the NTAK09 circuit card, use the NTBK04 cable
- for the NTAK10, NTAK79, and NTBK50 circuit cards, use the NTBK05 cable
- up to five 25-pair cables from each chassis.
  - — Each slot that is equipped with a trunk or line circuit card requires a cable.
    - – Connectors Card 1 through Card 6 on the back of the Main Chassis correspond to card numbers 1 through 6 in the Main Chassis.
    - – Connectors Card 7 through Card 10 on the back of the Chassis Expander correspond to card numbers 7 through 10 in the Chassis Expander.
    - – Allow for additional cables at the cross-connect terminal if initially you leave any of the slots in the chassis empty.
  - — If the NTAK19EC 2-port SDI cable or the NTAK19FB 4-port SDI cable are not used with the NTAK03 or NTAK02 cards, then you require a 25-pair cable for each of these cards.
- four conductors for the AUX cable from the Main Chassis

- one 25-pair cable from each QUA6 PFTU
- wiring from telephones and trunks

WARNING

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Never touch uninsulated telephone wiring, unless the line is disconnected at the network interface.

Installing the BIX cross-connect terminal

Procedure 19 describes how to install the BIX cross-connect terminal.

Procedure 19
Installing the BIX cross-connect terminal

1 Refer to the equipment layout plan to determine where to place the cross-connect terminal.

2 Layout the terminal blocks as shown in Figure 48 on page 172.

For information about the BIX system, refer to *BIX Installation and Servicing (631-4511-200).*

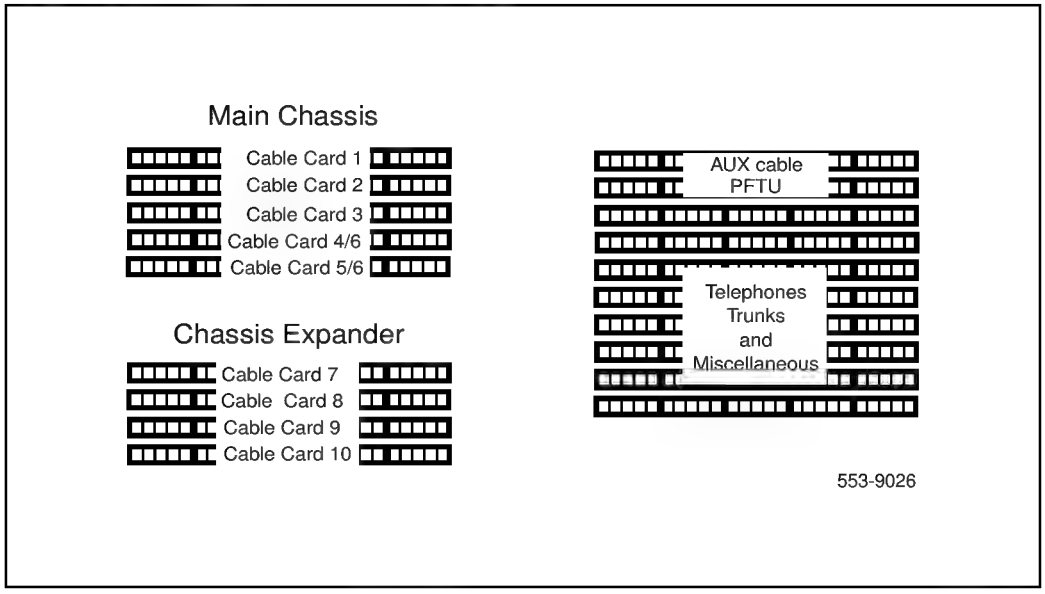
3 Attach labels on the cross-connect terminal to indicate the terminal blocks assigned to the following:

- 25-pair cables from the chassis
- AUX wiring
- Power Failure Transfer Units (PFTUs)
- telephones and consoles
- trunks
- miscellaneous equipment

Note: If you are installing the BIX cross-connect system, refer to *BIX Installation and Servicing (631-4511-200). This document* provides information about labels used with the BIX terminal blocks.

End of Procedure

Figure 48
Typical BIX cross-connect terminal layout



Note: One 25-pair cable contains Card 4 and Card 6 (units 0-7). Another 25-pair cable contains Card 5 and Card 6 (units 8-15).

Installing the Reichle Masari cross-connect terminal (Germany)

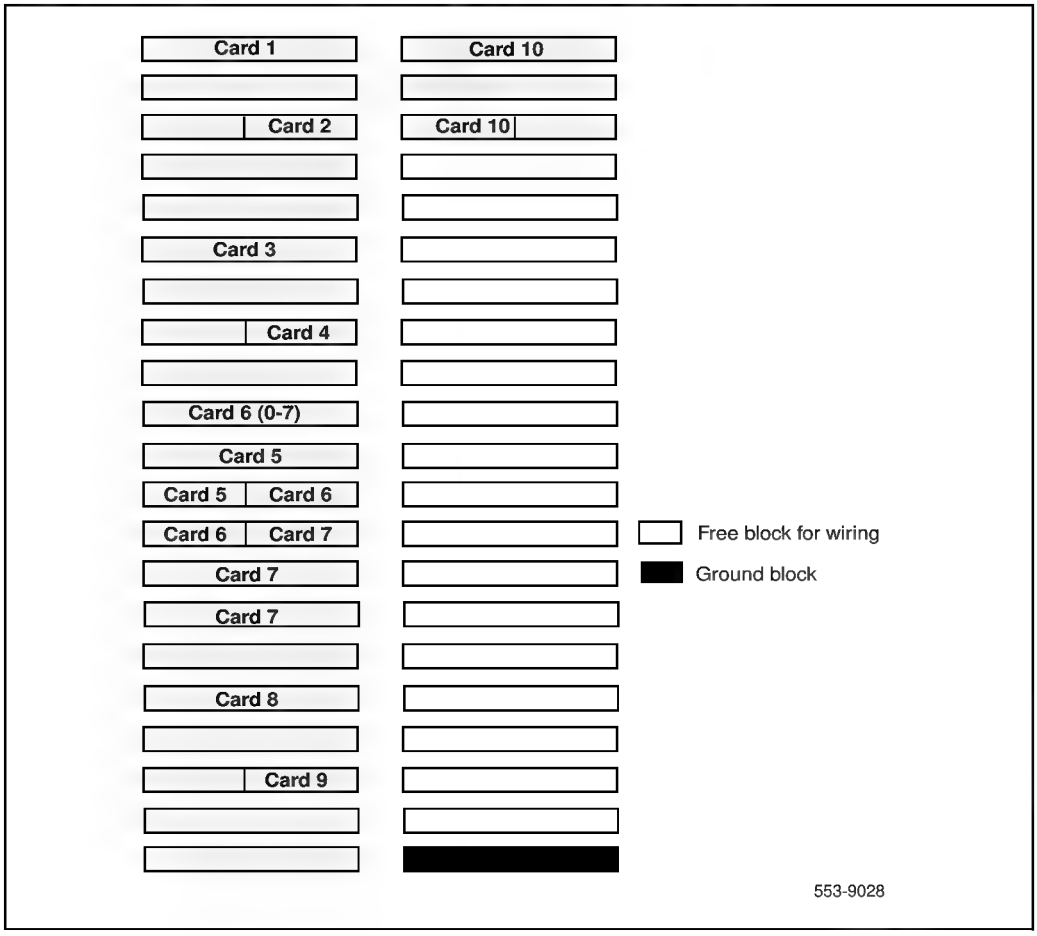
Procedure 20 describes how to install the Reichle Masari cross-connect terminal for Germany.

Procedure 20
Installing the Reichle Masari cross-connect terminal (Germany)

1 **Refer to the equipment layout plan to determine where to place the cross-connect terminal.**

2 Layout the terminal blocks as shown in Figure 49.

Figure 49
Typical Reichle Masari cross-connect terminal layout (Germany)



Note: One 25-pair cable contains Card 4 and Card 6 (units 0-7). Another 25-pair cable contains Card 5 and Card 6 (units 8-15).

3 **Attach labels on the cross-connect terminal to indicate the terminal blocks assigned to the following:**

- 25-pair cables from the chassis
- AUX wiring
- Telephones and Attendant Consoles
- Trunks
- Analog line cards
- DC5/AC15/RAN/PAG cards
- Data Access cards
- Power Failure Transfer Units
- Digital line cards
- Exchange line trunk cards
- Direct Dialing Inward trunk cards
- miscellaneous equipment

End of Procedure

Installing the Krone Test Jack Frame for the UK

The Krone Test Jack Frame provides terminating strips that hold 10 pairs of cable. Generally, only 8 of the 10 pairs are used. As a result, one 25-pair cable requires three terminating strips:

8 pairs/strip x 3 strips = 24 pairs

Figure 50 shows how one 25-pair cable is divided among three terminating strips on the Krone Test Jack Frame.

Figure 50
25-pair cable on three Krone strips

Pair	Pin number	Wire Colour	Krone strip
1T	26	W-BL	
1R	1	BL-W	
2T	27	W-O	
2R	2	O-W	
3T	28	W-G	
3R	3	G-W	
4T	29	W-BR	1
4R	4	BR-W	
5T	30	W-S	
5R	5	S-W	
6T	31	R-BL	
6R	6	BL-R	
7T	32	R-O	
7R	7	O-R	
8T	33	R-G	
8R	8	G-R	
9T	34	R-BR	
9R	9	BR-R	
10T	35	R-S	
10R	10	S-R	
11T	36	BK-BL	
11R	11	BL-BK	
12T	37	BK-O	2
12R	12	O-BK	
13T	38	BK-G	
13R	13	G-BK	
14T	39	BK-BR	
14R	14	BR-BK	
15T	40	BK-S	
15R	15	S-BK	
16T	41	Y-BL	
16R	16	BL-Y	
17T	42	Y-O	
17R	17	O-Y	
18T	43	Y-G	
18R	18	G-Y	
19T	44	Y-BR	
19R	19	BR-Y	
20T	45	Y-S	
20R	20	S-Y	
21T	46	V-BL	3
21R	21	BL-V	
22T	47	V-O	
22R	22	O-V	
23T	48	V-G	
23R	23	G-V	
24T	49	V-BR	
24R	24	BR-V	
25T	50	V-S	
25R	25	S-V	

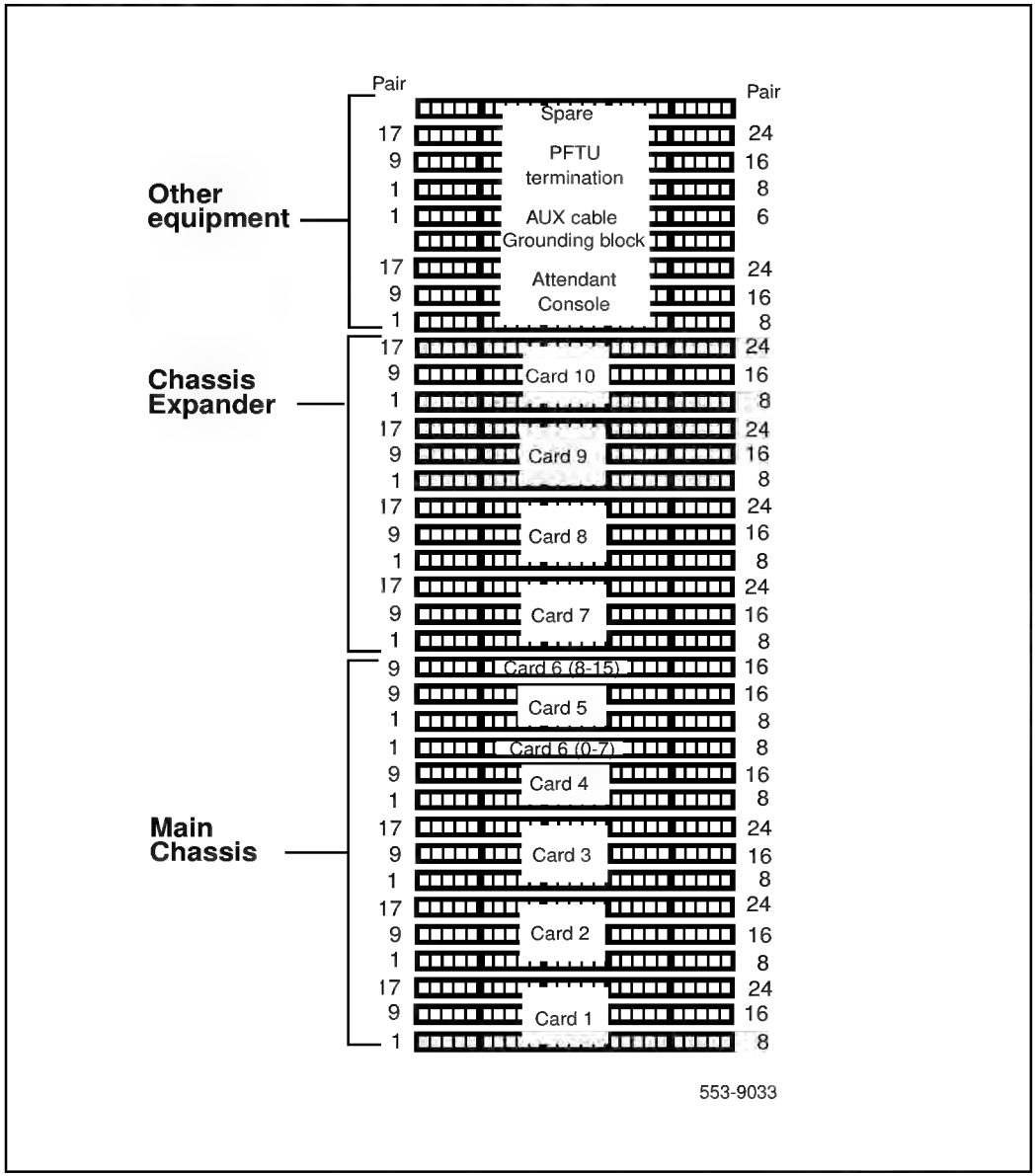
Procedure 21 describes how to install the Krone Test Jack Frame for the UK.

Procedure 21
Installing the Krone Test Jack Frame (UK)

1 **Refer to the equipment layout plan to determine where to place the cross-connect terminal.**

2 **Layout the terminal blocks as shown in Figure 51.**

Figure 51
Typical Krone cross-connect terminal layout (UK)



Note: One 25-pair cable contains Card 4 and Card 6 (units 0-7). Another 25-pair cable contains Card 5 and Card 6 (units 8-15).

3 Attach labels on the cross-connect terminal to indicate the terminal blocks assigned to the following:

- Analog line cards
- DC15/AC15/RAN/PAG cards
- Data Access cards
- AUX wiring
- Power Failure Transfer Units
- Digital line cards
- Telephones and Attendant Consoles
- Exchange line trunk cards
- Direct Dialing Inward trunk cards
- miscellaneous equipment

End of Procedure

Connecting the cables

WARNING

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Each Option 11C Mini system chassis requires up to five 25-pair cables. The Main Chassis requires an additional terminal block at the cross-connect terminal to terminate the 9-pin conductor auxiliary cable.

Connect all cables at the back of the chassis.

Note: Use caution when using NE-A25B cables with the NTAK02, and NTAK03 cards. These cables are not wired out to station equipment or trunk circuits. Do not use the NE-A25B cable with the NTBK45, NTAK10, NTBK50, or NTAK79 circuit cards.

For 1.5 Mbit and 2.0 Mbit DTI/PRI-related wiring and cable information, refer to the following documents:

- *Option 11C 1.5Mbit DTI/PRI Administration and Maintenance Guide (553-3011-310)*
- *Option 11C 2.0 Mbit DTI/PRI Administration and Maintenance Guide (553-3011-315)* for

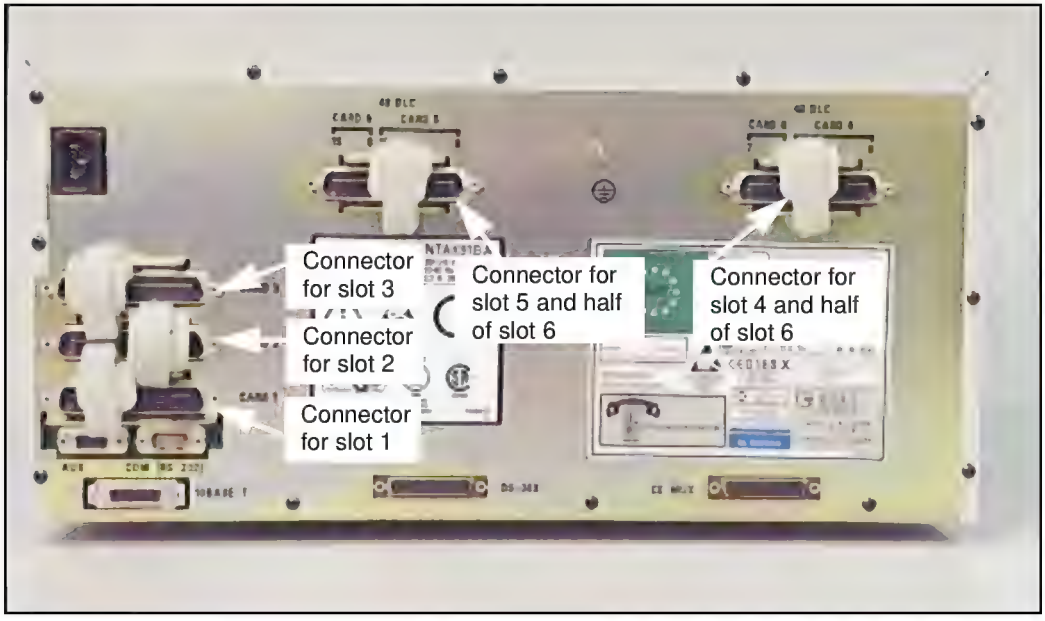
Procedure 22
Connecting the cables

1 **Loosen the velcro straps at each connector you plan to use.**

2 **Connect a 25-pair cable to each of the connectors that will contain a line or trunk card. Refer to the card slot assignment plan.**

Make sure you tag both ends of each cable with the chassis and connector numbers. See Figure 52.

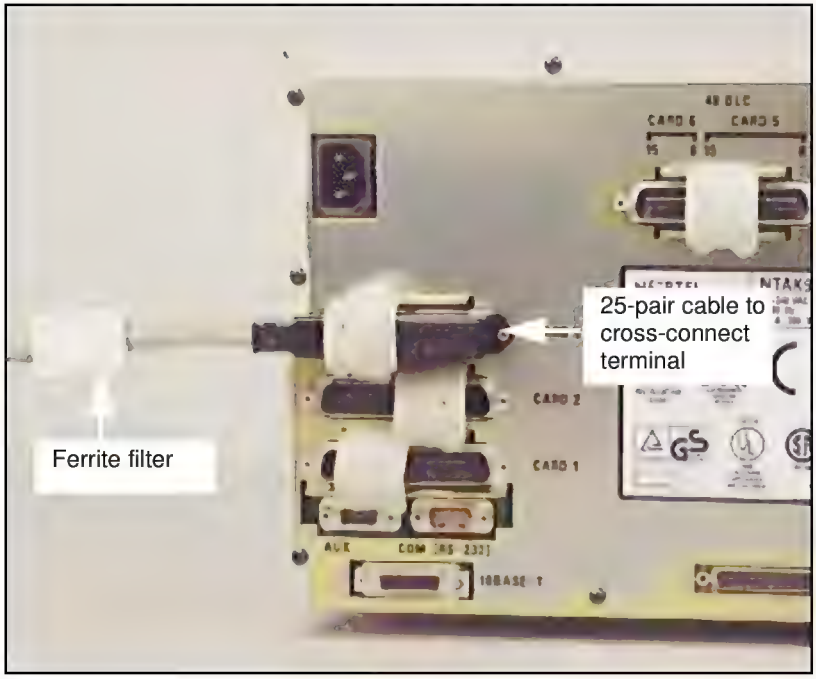
Figure 52
Cable connectors on the back of the Main Chassis


Connector for slot 3
Connector for slot 2
Connector for slot 1
Connector for slot 5 and half of slot 6
Connector for slot 4 and half of slot 6

3 **Tighten the velcro straps when you have connected each cable to the chassis.**

4 For systems required to meet CISPR-B Electromagnetic Compatibility (EMC), perform the following step. On each installed 25-pair cable, attach the supplied ferrite filter to the cable. Attach the ferrite filter as near the connector as possible (see Figure 53). To attach the ferrite filter, press the cable firmly into the groove on one side of the open filter. Close the filter around the cable and press the filter together using the fastening clip snaps close.

Figure 53
A ferrite filter installed on a 25-pair cable (CISPR-B EMC systems)

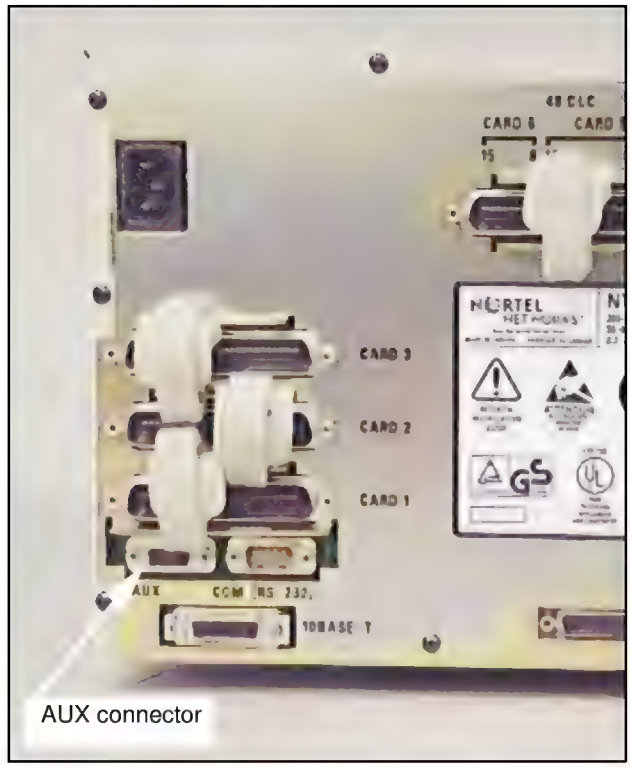


5 **Terminate all the 25-pair cables installed at the cross-connect terminal.**

Label all the cables at the cross-connect terminal blocks according to the card slot assignment plan.

6 **Install the AUX cable in the lower 9-pin connector located on the bottom left-hand side of the Main Chassis. See Figure 54.**

Figure 54
AUX cable connector



Terminate the AUX cable at the cross connect terminal, according to Table 34.

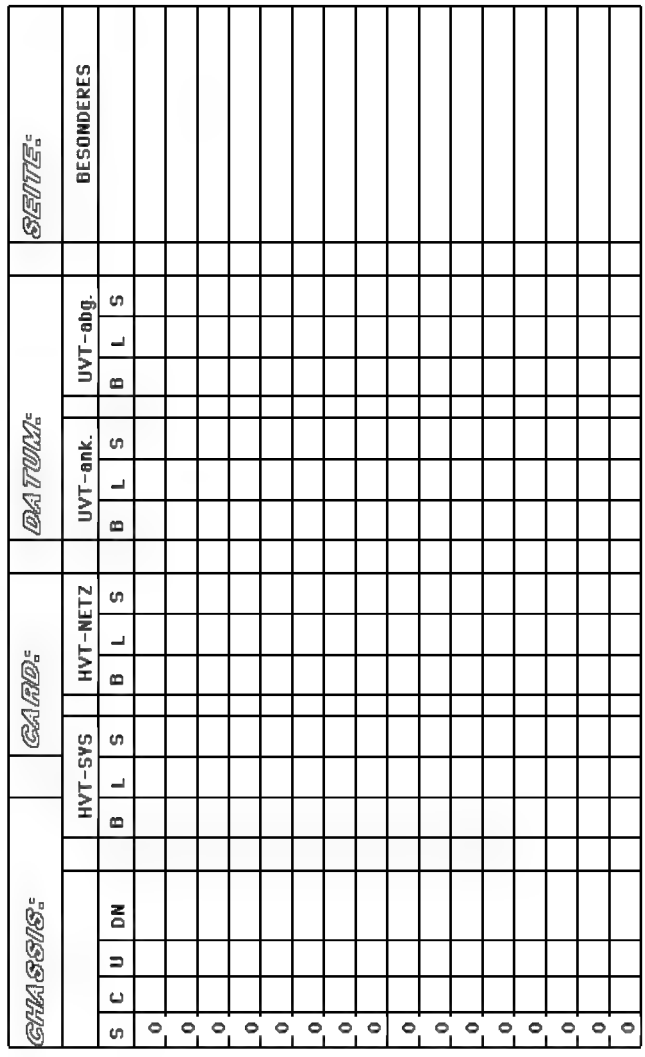
Table 34
AUX cable termination information

Color	Wire number	Designation	Connection
W-BL	1	BRTN	to QUA6-J1 1R
BL-W	2	BRTN	to QUA6-J1 2R
O-W	3	-48V AUX (250mA)	to QUA6-J1 25T, 25R
W-O	4	PFTS	to QUA6-J1 2T
G-W	5	Not used	Not used
W-G	6	Not used	Not used

7 For installations in Germany, complete the form shown in Figure 55 for each card slot.

This form provides a record of cross connections that you will perform after you start the system.

Figure 55
Cross connections record



End of Procedure

Chapter 14 — Installing Power Failure Transfer Units

This chapter describes how to install a QUA6 Power Failure Transfer Unit (PFTU). This chapter contains the following procedure:

- Procedure 23: "Installing the PFTU" on page 185

You can connect PFTUs to the Main Chassis.

> ***Note:*** The QUA6 PFTU operates with loop start and ground start CO trunks. With ground start trunks, the associated telephone set must have a ground start button.

If you require power failure backup as a fail safe for this system, use analog trunks. A PFTU does not support digital trunks.

Installing the PFTU

Refer to the equipment layout plan to determine where to locate the PFTU. See "Chapter 4 — Creating an equipment layout plan and a card slot assignment plan" on page 69.

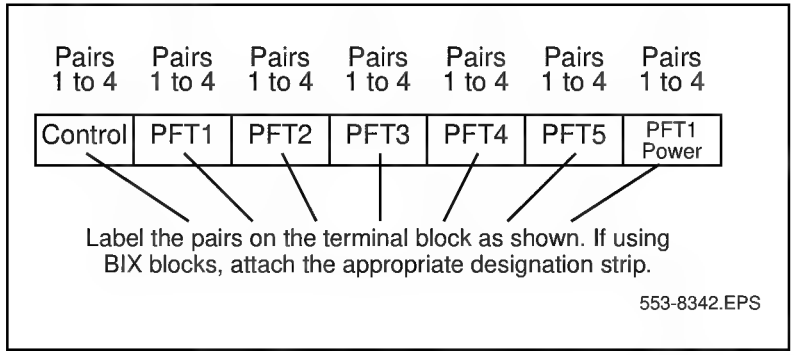
Procedure 23
Installing the PFTU

1 **Install the PFTU on the wall near the system cross-connect terminal. Fasten the PFTU in position with four screws.**

2 **Install an NE-A25B-type 25-pair cable from connector J1 on the faceplate of the PFTU to its assigned location at the cross-connect terminal.**

3 **Label the pairs of the J1 cable on the cross-connect terminal block as shown in Figure 56 on page 186.**

Figure 56
J1 cable labels



4 **Connect the PFTU power and control connections to the AUX connector on the Main Chassis. See Figure 57 on page 187 and Table 35 on page 188.**

Figure 57
Auxiliary connector

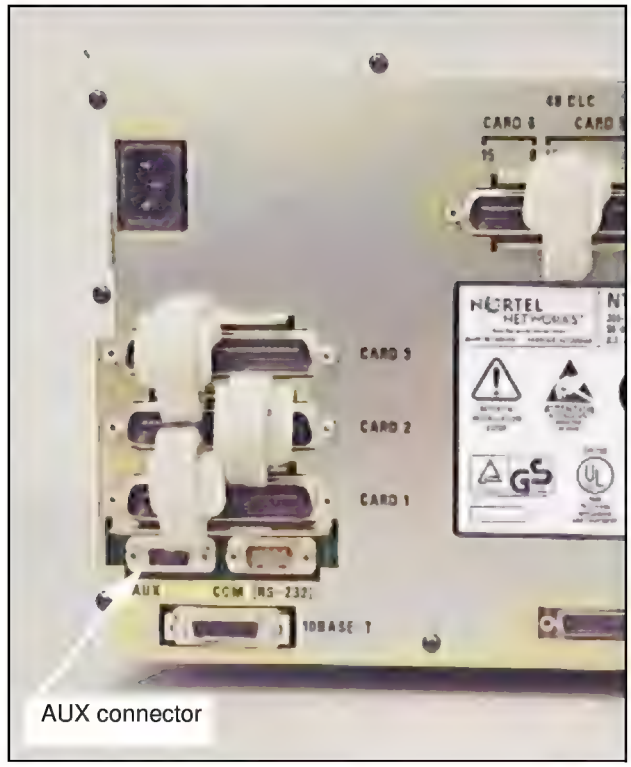


Table 35
Control and power connections on cable J1

J1 Cable from QUA6 (see Figure 58 on page 189)				
Function	**Pair Number**	**Pair Color**	**Connects to**	**Cross-connect to**
Control	1T	W-BL	(ALM)	Not used.
	1R	BL-W	BRTN	W-BL 1-dot connection on AUX cable from the chassis
	2T	W-O	PFTS	W-O 1-dot connection on AUX cable from the chassis. Transfer begins by applying ground to this lead.
	2R	O-W	BRTN	BL-W 1-dot connection on AUX cable from the chassis
	3T	W-G	(TC)	Console transfer switch. See console connections. Transfer begins by applying ground to this lead.
	3R	G-W		Not used.
	4T	W-BR		Not used.
	4R	BR-W		Not used.
PFTU power	25T 25R	S-V V-S	-48 V -48 V	O-W 1-dot connection on AUX cable. Maximum 250 mA draw on O-W lead.

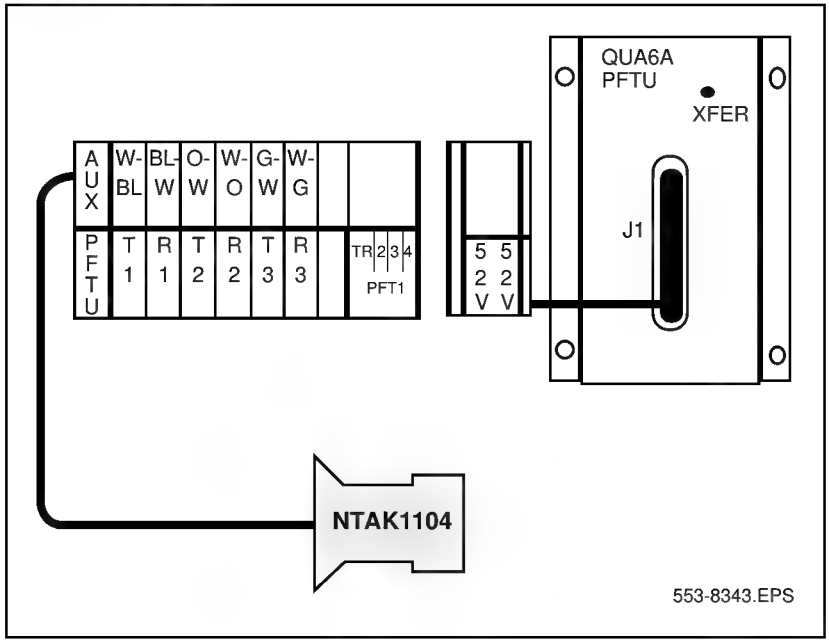
5 Connect the Attendant Console to the PFTU:

- Attendant Console 14 Tip (14T) to ground
- 3 Tip (3T) of PFTU to 11 Ring (11R) of Attendant Console (power fail transfer switch)
- Attendant Console 11 Tip (11T) to ground

Note: The AUX cable on the Option 11C Mini does not provide power to the M2250 Attendant Console. Two Digital Line Card TNs or an Attendant Console power supply provide power to the M2250 Attendant Console.

End of Procedure

Figure 58
Power fail transfer



PFTU control lead signals

To connect PFTUs from other manufacturers, use the information provided in Table 36.

Table 36
PFTU control lead signals

NTAK1104 AUX cable lead	Lead State when PFTU is in non-transferred state	Lead State when PFTU is in transferred state
BRTN	GROUND	GROUND
BRTN	GROUND	GROUND
-48V AUX	-48V DC (250 mA max.)	-48V DC (250 mA max.)
PFTS	OPEN	GROUND

Note 1: Refer to Figure 57 on page 187 to see where the Auxiliary cable connects to the Option 11C Mini system.

Note 2: If power is removed from the QUA6, a transfer of the PFTU can occur.

Chapter 15 — Installing and connecting SDI and Ethernet ports

This chapter contains modem setup requirements and the following two procedures for connecting communication devices to the Option 11C Mini:

- Procedure 24 "Connecting SDI ports on the MSC card" on page 193
- Procedure 25 "Setting up the terminal" on page 201
- Procedure 26 "Connecting the Ethernet cable" on page 206

In an Option 11C Mini system, the following cards provide SDI ports:

- NTDK97 MSC card provides three SDI ports
- NTAK02 SDI/DCH card provides four ports of which up to two can be SDI ports
- NTAK03 TDS/DTR card provides two SDI ports

Note: The NTDK97 MSC card includes the functionality of the NTAK03 card. However, you can also configure the NTAK03 card, if required.

Modem setup requirements

Modems connected to the Option 11C Mini are set as follows:

- Carrier Detect (CD): Active if carrier detected on incoming call
- Clear to Send (CTS): Normal operation or forced active
- Hardware and software: Disabled flow control

The ports on the Option 11C Mini are disabled if devices connected to the ports generate additional "garbage" characters. For this reason, do not use modems in the following modes:

- Loopback
- Auto Echo
- Self Test

Note: The SDI ports are designed for use with "dumb" modems. "Intelligent" modems can be used. Make sure that the modems do not enter into modes of operation that send additional characters to the system.

Table 37 lists some of the problems that can be related to modems.

Table 37
Modem problems

Problem	Solution
CDR is not printing on an ESDI port configured as 8 bits, no parity, and 1 stop bit.	Change the modem setup to 7 bits, no parity, 1 stop bit, or add MTC or SCH to the ESDI user prompt.
Modem is not communicating with the Option 11C Mini when the User is MTC, BUG, or CTY (The default setting of 8 bits, no parity, 1 stop bit is incompatible with the modem).	Change the modem setup to 7 bits or the parity to EVEN/ODD.

Installing and connecting SDI ports

You can use a switch setting on the circuit card's faceplate to control the baud rate for port 0. Make sure the baud rate and device option settings are set correctly.

Note: When the time comes to configure ports 1 and 2, configure them in Overlay 17.

- Use Port 0 for software installation and upgrades. SDI port 0 is the only SDI port that you can use for software installation and upgrades.
- You can use all three ports on the MSC card to connect terminals or modems.
- Use an NTBK48 3-port SDI cable with the MSC card.

Note: The default baud rate of the MSC card is 1200 bps; the maximum data rate is 19,200 bps. When you change the DIP switch on the faceplate, make sure only one baud rate switch is set to ON. See Table 38.

Table 38
Default port configuration for the MSC card

Port	Use	Baud rate	Data bits	Stop bits	Parity
0	MTC/SCH/BUG	Set by a DIP switch	8	1	None
1	MTC/SCH/BUG	1200 (See Note 1)	8	1	None
2	MTC/SCHBUG	1200 (See Note 2)	8	1	None

Procedure 24 describes how to connect a terminal, modems, and other devices, such as CDR devices and additional TTYs, to the MSC card.

Procedure 24
Connecting SDI ports on the MSC card

1 The NTBK48 3-port SDI cable has one ferrite filter attached to it. Connect an additional ferrite filter as close as possible to the 9-pin connector on the NTBK48 3-port SDI cable.

Note: The additional ferrite filter comes with the Option 11C Mini system.

2 Connect the NTBK48 3-port SDI cable to the 9-pin SDI connection (COM RS-232) at the back of the Main Chassis. See Figures 59 and 60.

Figure 59
SDI cable connection

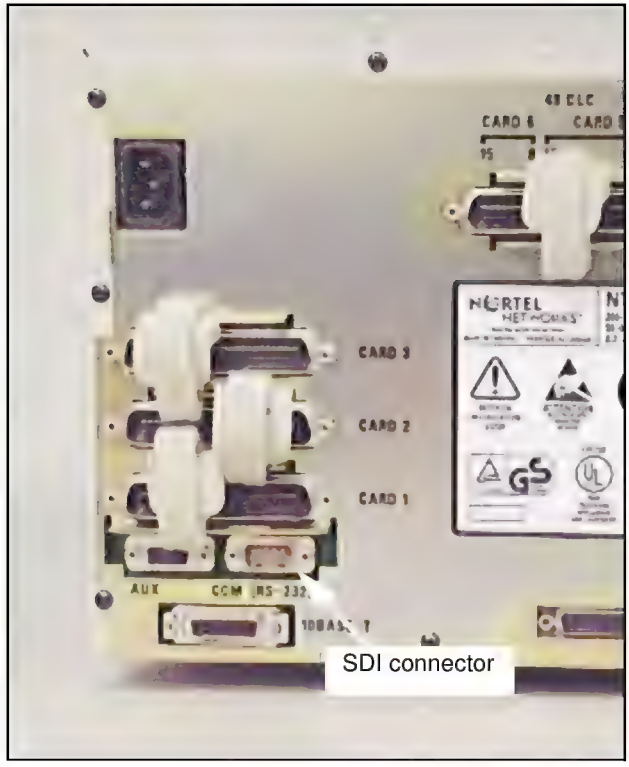
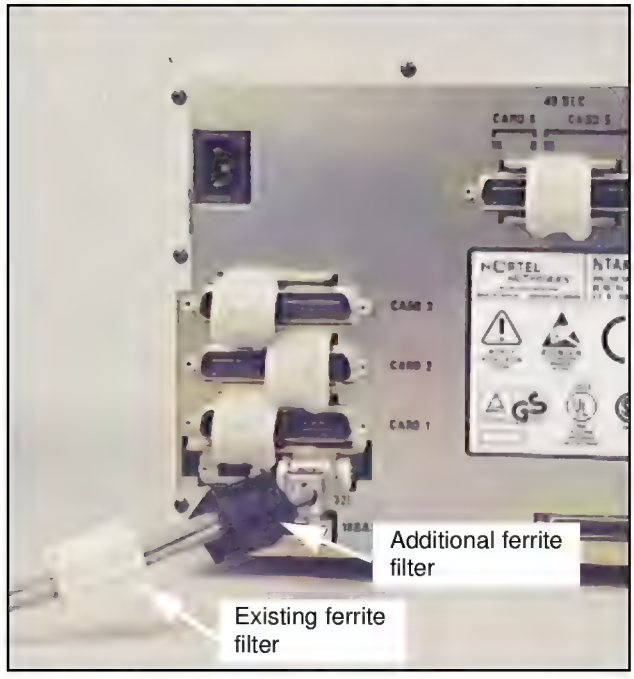


Figure 60
An additional ferrite filter attached to the SDI cable



3 **Connect the system terminal to the cable marked "port 0" on the NTBK48 3-port cable.**

You require a Modem Eliminator Adapter to connect the Option 11C Mini to a TTY terminal. This adapter is in included in the NTDK88 cable kit.

4 **If the system is to be accessed remotely, connect the system modem to the cable marked "port 1" on the NTBK48 cable.**

5 **Connect the modem to an outside line.**

6 **Test the modem for correct operation when the system is operating.**

Note: You can use the remaining ports for other equipment, such as CDR devices or TTYs.

End of Procedure

NTAK02 SDI/DCH card

Only the Main Chassis supports the NTAK02 SDI/DCH card. You can configure this card to support ports for the following:

- two SDI and two DCHI
- one SDI, one DCHI, and two ESDI
- four ESDI

You can use the NTAK02 ports to access overlay software. Define these ports in the configuration database as the SDI logical type.

An NTAK19FB 4-port SDI cable is designed for use with the NTAK02 circuit card. However, you can use an NE-A25B 25-pair cable to extend the connections to the cross-connect terminal. See Tables 39 through 42 for the connections for each port.

Table 39
NTAK02 pinouts — Port 0 at the cross-connect terminal

Cable		RS232			
		Signal		Designations (I=input/O=output)	
Pair	Color	DTE	DCE	DTE	DCE
1T 1R	W-BL BL-W	0 DTR	0 DCD	- O	- I
2T 2R	W-O O-W	DSR DCD	CH/CI DTR	I I	O O
3T 3R	W-G G-W	RTS CTS	CTS RTS	O I	I O
4T 4R	W-BR BR-W	RX TX	TX RX	I O	O I
5T 5R	W-S S-W	- SG	- SG	- -	- -

Table 40
NTAK02 connections at the cross-connect terminal — Port 1

Cable		RS422				RS232			
		Signal		Designations (I=input O=output)		Designations (I=input O=output)		Signal	
Pair	Color	DTE	DCE	DTE	DCE	DTE	DCE	DTE	DCE
5T 5R	W-S S-W	SCTEA -	SCTA -	O -	I -	O -	I -	SCT -	SCT -
6T 6R	R-BL BL-R	SCTEB DTR	SCTB DCD	O O	I I	- -	- -	CH/CI DTR	- DCD
7T 7R	R-O O-R	DSR DCD	CH/CI DTR	I I	O O	I I	O O	DSR DCD	CH/CI DTR
8T 8R	R-G G-R	RTS CTS	CTS RTS	O I	I O	O I	I O	RTS CTS	CTS RTS
9T 9R	R-BR BR-R	SCRA SCTA	SCTEA RXCA	I I	O O	I I	O O	SCR SCT	SCT -
10T 10R	R-S S-R	SCRB SCTB	SCTEB RXCB	I I	O O	- -	- -	- -	- -
11T 11R	BK-BL BL-BK	RXDA TXDA	TXDA RXDA	I O	O I	I O	O I	RXD TXD	TXD RXD

Table 40
NTAK02 connections at the cross-connect terminal — Port 1 (Continued)

12T 12R	BK-O O-BK	RXDB TXDB	TXDB RXDB	I O	O I	- -	- -	- -	- -
25T 25R	V-S S-V	SG -	SG -	- -	- -	- -	- -	SG -	SG -

Table 41
NTAK02 connections at the cross-connect terminal — Port 2

Cable		**RS422**				**RS232**			
		Signal		**Designations (I=input O=output)**		**Designations (I=input O=output)**		**Signal**	
Pair	Color	DTE	DCE	DTE	DCE	DTE	DCE	DTE	DCE
13T 13R	BK-G G-BK			- -	- -	- O	- I	- DTR	- DCD
14T 14R	BK-BR BR-BK			- -	- -	I I	O O	DSR DCD	CH/CI DTR
15T 15R	BK-S S-BK			- -	- -	O I	I O	RTS CTS	CTS RTS
16T 16R	Y-BL BL-Y			- -	- -	I O	O I	RX TX	TXD RXD
17T 17R	Y-O O-Y			O -	I -	O -	I -	- SG	- SG

Table 42
NTAK02 connections at the cross-connect terminal — Port 3

Cable		RS422				RS232			
		Signal		Designations (I=input O=output)		Designations (I=input O=output)		Signal	
Pair	Color	DTE	DCE	DTE	DCE	DTE	DCE	DTE	DCE
17T 17R	Y-O O-Y	SCTEA -	SCTA -	O -	I -	O -	I -	SCT -	SCT -
18T 18R	Y-G G-Y	SCTEB DTR	SCTB DCD	O O	I I	- -	- -	CH/CI DTR	- DCD
19T 19R	Y-BR BR-Y	DSR DCD	CH/CI DTR	I I	O O	I I	O O	DSR DCD	CH/CI DTR
20T 20R	Y-S S-Y	RTS CTS	CTS RTS	O I	I O	O I	I O	RTS CTS	CTS RTS
21T 21R	V-BL BL-V	SCRA SCTA	SCTEA RXCA	I I	O O	I I	O O	SCR SCT	SCT -
22T 22R	V-O O-V	SCRB SCTB	SCTEB RXCB	I I	O O	- -	- -	- -	- -
23T 23R	V-G G-V	RXDA TXDA	TXDA RXDA	I O	O I	I O	O I	RXD TXD	TXD RXD
24T 24R	V-BR BR-V	RXDB TXDB	TXDB RXDB	I O	O I	- -	- -	- -	- -
25T 25R	V-S S-V	- SG	- SG	- -	- -	- -	- -	SG -	SG -

NTAK03 TDS/DTR card

The NTDK97 MSC card includes the functionality of the NTAK03 TDS/DTR card. However, you can also configure the NTAK03 card, if required.

An NTAK19EC cable is designed for use with the NTAK03 circuit card. However, you can use an NE-A25B 25-pair cable to extend the connections to the cross-connect terminal. Table 43 on page 200 and Table 44 on page 201 show the connections for each port.

Use a modem eliminator to connect the RS232 converter cable and the NTAK19EC SDI cable to a terminal. The modem eliminator is not required when connecting to a modem.

Note: A modem eliminator is supplied with the system.

Table 43
NTAK03 connections at the cross-connect terminal — Port 0

Pair	Color	Signal	Designations (I=input, O=output)
1T 1R	W-BL BL-W	DSR DCD	I I
2T 2R	W-O O-W	- DTR	- O
3T 3R	W-G G-W	RTS CTS	O I
4T 4R	W-BR BR-W	RX TX	I O
5T 5R	W-S S-W	SG -	O -

Table 44
NTAK03 connections at the cross-connect terminal — Port 1

Pair	Color	Signal	Designations (I=input, O=output)
6T 6R	R-BL BL-R	DSR -	I -
7T 7R	R-O O-R	- DTR	- O
8T 8R	R-G G-R	RTS CTS	O I
11T 11R	BK-BL BL-BK	RX TX	I O
13T 13R	BK-G G-BK	- DCD	- I
22T 22R	V-O O-V	SG -	O -

Terminal setup

The terminal can be setup any time, except during data transmission. Do not set up the terminal during data transmission to avoid potential data loss.

Table 46 on page 203 and Table 48 on page 205 provide setup values. Use Procedure 25 to set up the terminal.

Procedure 25
Setting up the terminal

1 **Turn on the power for the terminal.**

2 **Enter setup mode by pressing the <SETUP> key located on the top row of the special function keys.**

The terminal screen displays the current setup values.

3 **Change the value in each field on each setup screen as necessary.**

Use the keys listed in Table 45 to view and change setup values.

Table 45
Setup (keys and functions)

Key	Function
Arrow key	Move from field to field
<Enter>	Scroll through possible values or cause requested action to occur (depends on type of field)
<Next Screen>	Move to next setup screen
<Prev Screen>	Move back to last screen

4 **Save changes by returning to the *General setup* screen, moving the cursor to the** Saved **field, and pressing *<Enter>*.**

End of Procedure

Table 46
HP700/32 setup values

Global set-up screen			
Host Port	1	Keyboard	U.S.
Background	Dark	Message Translations	English
Screen Saver	10 Min	Setup Translations	English
Refresh Rate	72 Hz	Clear Display	
Key Click	Yes	Clear Comm	
User Set-up Screen			
Smooth Scroll	Jump scroll	Display Width	80
Cursor Type	Blink Line	Display Width Allowed	80 or 132
Cursor	Off	Char Cell Height	16
2nd Message Line	On	Clr on Width Change	Yes
Message Line	On	Aux Mode	Off
Status Line	On	Aux to Host	Off
On Line	Yes	Print Terminator=FF	No
Local Echo	Off	Logical Page Size	24
Auto Wrap	Off	Number of Pages	1
Auto Linefeed	Off		
Display Ctrl Codes	Off		
Emulation Set-up			
Emulation	VT320	Cursor Keys	Normal
Terminal Id	VT220	Print Scroll Region	Off
Control Codes	7-bit	User Features Locked	No
Characters Mode	8-bit	User Keys Locked	No
Preferred Char Set	DEC Supplemental	Data Procession Keys	No
Key Pad Mode	Application		
Port 1 Set-up			
Communications	Full Duplex	Limited Transmit	Off
Data Length	8-bits	DSRI	No
Parity	None	CTS	Ignore
Stop Bits	1	CD	Ignore
Xmit Baud	2400	Break Disconnect	170ms
RecvBaud	=Xmit	Disconnect Delay	Never
Xmit pace	Xoff	Aux printer Type	National
Recv Pace	Xoff at 128		
Port 2 Set-up			
Communications	Full Duplex	Xmit pace	Xon/Xoff
Data Length	8-bits	Recv Pace	Xoff at 128
Parity	None	Limited Transmit	Off
Stop Bits	1	Break Duration	170ms
Xmit Baud	9600	Aux Printer Type	National
RecvBaud	=Xmit		
Keyboard Set-up			
Lock Key	Caps Lock	Warning Bell	Yes
Kbd Lock Enable	Yes	Auto Answerback	Yes
Save Tabs	Yes	Answerback =	
Auto Repeat	Yes	Conceal Answerback	No
Margin Bell	Yes	Do not set any tabs or programmed keys.	

Table 47
VT420 setup values

Global Set-Up	
On Line	Comm1=RS232
Sessions on Comm1	70Hz
CRT Saver	Printer Shared
Display Set-Up	
80 Columns	No Status Display
Interpret Controls	Cursor Steady
Auto Wrap	3x24 pages
Jump Scroll	24 Lines/Screen
Dark Screen	Vertical Coupling
Cursor	Page Coupling
Block Style Cursor	Auto Resize Screen
General Set-up	
VT400 Mode, 7-bit Controls	Normal Cursor Keys
User Defined Keys Unlocked	No New Line
User Features Unlocked	UPSS DEC Supplemental
8-bit Characters	VT420 ID
Application Keypad	When Available Update
Communications Set-Up	
Transmit=2400	Disconnect, 2 s Delay
Receive=Transmit	Limited Transmit
Xoff=64	No Auto Answerback
8bits, No Parity	Answerback=
1 Stop Bit	Not Concealed
No Local Echo	Modem High Speed = ignore
Data Leads Only	Modem Low Speed = ignore
Printer Set-Up	
Speed=2400	8bits, No Parity, 1 Stop bit
No printer to Host	Print Full Page
Normal Print Mode	Print National Only
XOFF	No Terminator
Keyboard Set-up	
Keyboard Set-up	Local Compose
Typewriter Keys	Ignore Alt
Caps Lock	F1 = Hold
Auto Repeat	F2 = Print
Keyclick High	F3 = Set-Up
Margin Bell	F4 = Session
Warning Bell High	F5 = Break
Character Mode	,< and .> Keys
<X] Delete	<> Key
	'~Key
Tab Set-Up	
Leave this screen at the default values	

Table 48
VT220 setup values

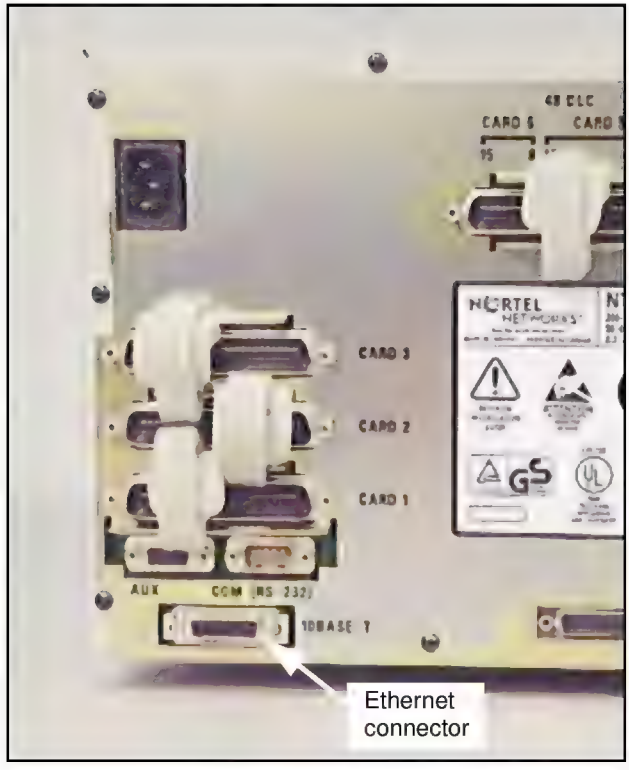
Global Set-Up		
On Line	Comm1=RS232	
Sessions on Comm1		70Hz
CRT Saver	Printer Shared	
Display Set-Up		
80 Columns	Light Text, Dark Screen	
Interpret Controls	Cursor	
Auto Wrap	Block Style Cursor	
Jump Scroll		
General Set-up		
VT200 Mode, 7-bit Controls	Application Keypad	
User Defined Keys Unlocked	Normal Cursor Keys	
User Features Unlocked	No New Line	
Multinational		
Communications Set-Up		
Transmit=2400	No Local Echo	
Receive=Transmit	Data Leads Only	
Xoff at 64	Disconnect, 2 s Delay	
8bits, No Parity	Limited Transmit	
1 Stop Bit		
Printer Set-Up		
Speed=9600		
Normal Print Mode	Print Full Page	
8bits, No Parity,	Print National Only	
1 Stop bit	No Terminator	
Keyboard Set-up		
Typewriter Keys	Warning Bell	
Caps Lock	Break	
Auto Repeat	Answerback=	
Keyclick High	Not Concealed	
Margin Bell		
Tab Set-Up Screen		
Leave this screen at the default values		

Installing and connecting an ethernet cable

Ethernet connection

The Option 11C Mini system provides a 10 Mbit Ethernet connection to a Local Area Network (LAN). The ethernet cable connector is at the back of the Main Chassis on the bottom left-hand side. See Figure 61.

Figure 61
Ethernet connection



Procedure 26
Connecting the Ethernet cable

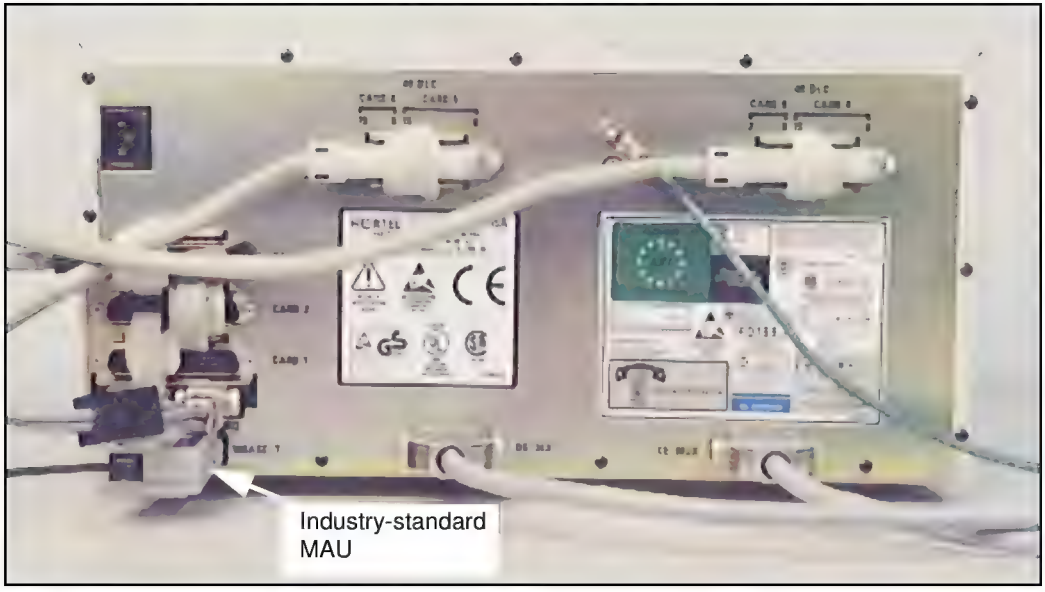
1 Insert an industry-standard Medium Access Unit (MAU) into the Ethernet connection at the bottom left-hand corner of the Main Chassis.

Note: The Option 11C Mini system does not include the MAU.

2 Insert the Ethernet cable into the MAU. See Figure 62.

Note: When the time comes to configure the Ethernet link, use Overlay 117.

Figure 62
Ethernet cable inserted into an industry-standard MAU



End of Procedure

Chapter 16 — Starting the Option 11C Mini and installing software

This chapter describes how to start the Option 11C Mini system and to make sure that the system is operating correctly. This chapter also describes the Software Installation Program and how to install software in the Option 11C Mini system. This chapter contains the following procedures:

- Procedure 27: "Start-up procedure for a new system installation, using the MSC card" on page 210
- Procedure 28: "Start-up procedure for a previously installed system" on page 211
- Procedure 29: "Installing software" on page 216

Starting the Option 11C Mini

Before you continue with the procedures described in this section, make sure all necessary hardware is connected to, or installed in the system. Check all connections, and make sure that you have installed all of the circuit cards correctly.

Before you start the Option 11C Mini, complete Step 1 through Step 17 in "Chapter 6 — Installing the Option 11C Mini" on page 91.

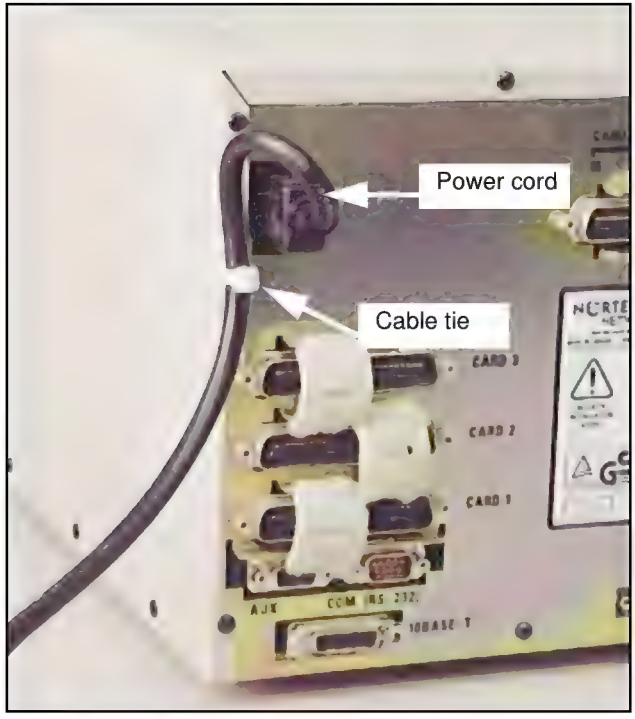
Start-up procedures

Procedure 27
Start-up procedure for a new system installation, using the MSC card

1 Test the power outlet. Make sure that the correct voltage of power is present before you plug the power cord into the outlet. The source must match the label on the back of the chassis.

2 Connect the power cord from the power connector on the back of the chassis to an AC power source. See Figure 63. Secure the power cable with a cable tie.

Figure 63
Power connector on the back of the chassis



3 Turn the power switch to "ON".

4 Observe the TTY or terminal screen. The TTY must be connected to TTY port 0.

5 When you have completed the software installation (see "Installing software in a new system" on page 215), observe the screen again.

6 Perform an EDD using Overlay 43.

After the system is loaded, a menu-driven program called the "Software Installation Program" is automatically called up.

End of Procedure

Procedure 28
Start-up procedure for a previously installed system

1 Test the power outlet. Make sure that the correct voltage of power is present before you plug the power cord into the outlet. The source must match the label on the back of the chassis.

2 Connect the power cord from the power connector on the back of the chassis to an AC power source. See Figure 63. Secure the power cable with a cable tie.

3 Turn the power switch to "ON".

4 Observe the TTY or terminal screen.

Messages appear on the TTY or the terminal screen. When the message "INIXXX" appears, the system is in operation.

5 If required, set the system time and date using Overlay 2.

6 Perform an EDD using Overlay 43.

End of Procedure

Software Installation Program

The Software Installation Program provides a menu-driven method of selecting from the different options of installing, modifying, or upgrading the following:

- software
- customer data
- feature set
- Incremental Software Management (ISM) parameters

The flash ROM stores information about the selections. The information is a list of instructions that the program follows when it runs.

Starting the program

The Software Installation Program must run from TTY 0 (port 0 on card 0). The following are the two methods of starting the Software Installation Program:

- Issue the "upgrade" command in Overlay 143.
- Press the <Control> I keys while the terminal screen displays the installation prompt during SYSLOAD.

  Note: When you turn on a new system before you have installed the software, the Software Installation Program is called up automatically.

Function selection

The Software Installation Program is menu-driven. The main menu provides the core functionality of the program. The Software Installation Program includes the following key functions:

- installs software in a new system
- upgrades and modifies software in an existing system
- uses utilities to work with archived databases, review data, back up data, undo an installation in progress, and clear unwanted data.

After you have made all installation or upgrade selections, you must enter valid keycodes. The system validates the keycode. If you enter an invalid keycode, the installation function does not continue.

Note: If you enter a keycode that is not valid, the software and databases on the present system are not affected.

When the keycode validation passes, the software is installed on the system.

The Software Installation Program has the following additional options:

- **Clear Upgrade Information:** If the installation terminates after you have entered the keycodes, but before the installation is complete, you can abort the installation with the "Clear Upgrade Information" option.

- **Confirm Upgrade Information:** This option allows you to review the selected installation options. You can use the "Confirm Upgrade Information" after the system validates the keycodes, but before the installation is complete.
- **Set system time and date:** The system time and date is usually set before installation. This makes sure that all flash drive files have the correct creation date.

Keycodes

A security keycode system protects the installation of software, feature set, and ISM parameters. The installation does not continue unless you enter the correct keycodes.

You require keycodes for each new installation, and for existing system upgrades. Keycodes are on a Keycode Data Sheet, which is supplied with the software and security device. There is a different keycode assigned to each site for a particular combination of items, such as software release, feature set, and ISM parameters.

> ***Note:*** Contact your Nortel Networks representative if the Keycode Data Sheet is missing.

The Software Installation Program validates the keycodes. If the keycodes are valid, the installation function continues.

If the system rejects the keycodes that you enter, the installation function stops. Take one of the following actions:

- Check the software and make sure that it is the correct version for this site.
- Check the feature set and make sure you entered the correct data.
- Check the keycodes and make sure you entered the correct keycodes.
- Check the ISM parameters and make sure you entered the correct data.
- Abort the installation.

The system limits the validation of keycodes to three consecutive attempts. After the third unsuccessful attempt, the Software Installation Program returns to the main menu. Any data entered during this session is lost.

Feature set and ISM parameters

The Software Installation Program allows the selection of a feature set to be installed and enabled on the Option 11C Mini system. A feature set, such as Enhanced Business or Networking Services, has an associated list of software packages and ISM parameters. The Software Delivery Card can include several preconfigured feature sets.

The Software Installation Program also allows the addition of individual packages from the feature set and the changing of ISM system parameters.

Additions and changes are keycode controlled; therefore, the packages and ISM parameters must match those corresponding to the site's keycodes.

> ***Note:*** The Software Installation Program does not check the prerequisites and interactions of added packages.

Security Device

A Security Device comes with each new Option 11C Mini system. Attach this device to the component side of the NTDK97 MSC card at the time of initial installation. The Security Device remains there for the life of the system.

AUX ID

Enter the AUX ID using the Software Installation Program. For new Option 11C Mini sites, the AUX ID is the system security ID. When assigned, the AUX ID remains for the life of the system.

Customer database

The Software Installation Program allows the installation of a customer database from one of the following sources:

Preconfigured database

The Software Delivery card can include several preconfigured databases and their associated feature sets. In addition, a minimal database is provided which contains basic system configuration information with no customer data.

Archived database

The Software Installation Program allows the archiving of various databases which can be used later at Option 11C Mini sites. It allows multiple databases to be configured off-site and then installed ready-to-use at customer sites.

Note: Off-site programming of databases is subject to all security keycode restrictions. The off-site system must either use the Security Device that will be installed in the Option 11C Mini at the customer site, or must have its own keycodes for the feature set used.

Remote restored database

A database can be restored remotely using the Overlay 143 CCBR remote restore command.

Backed up Database

The Backed up Database option allows the copy on the backup flash drive to be installed. It is provided to recover a customer database if the customer database on the primary flash drive becomes corrupted.

Installing software in a new system

Before beginning the software installation process, complete Step 1 through Step 20 in "Summary of installation procedures" on page 92. You must install the security device on the MSC card, and you must have the Keycode Data Sheet available.

Note: In the menus and screens, there are references to Option 11 and Option 11E. These references do not apply to the Option 11C Mini.

Summary of steps

The following list summarizes the Software Installation steps:

- Setting the system time and date
- Selecting the New System Installation menu
- Selecting Feature Set and packages
- Selecting a database
- Selecting Incremental Software Management (ISM) parameters
- Validating keycodes
- Loading the software

Procedure 29
Installing software

1 **Make sure the MSC card is in CPU slot (slot 0) of the Main Chassis.**

For first-time installations, software is installed from the MSC card. Software is loaded on the MSC card before it is sent to the customer site.

2 **Observe the terminal screen.**

One of two messages appear, and the software installation continues accordingly. If the message is:

INSERT SOFTWARE DELIVERY CARD

Go to Step 3.

OR if the following is displayed:

SOFTWARE INSTALLATION PROGRAM

go to Step 4 on page 217.

3 Skip this step unless you are using the Software Delivery (PCMCIA) to install the software.

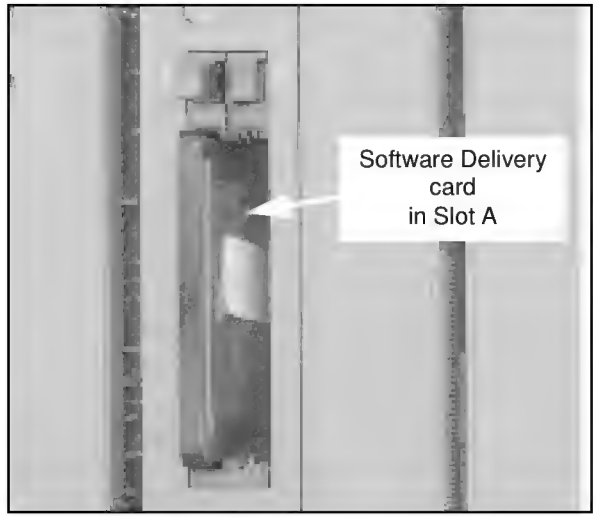
If you have not already done so, install the Software Delivery card in Slot A in the socket in the faceplate of the MSC card.

Note: You do not have to turn off the system power before you install the Software Delivery card in Slot A.

See Figure 64.

Insert the card in slot A in the PCMCIA socket located in the faceplate of the NTDK97 MSC card. Carefully press on the Software Delivery card until it is firmly seated. See Figure 64.

Figure 64
PCMCIA card slot location



4 Observe the terminal screen.

If the screen displays the following:

Current system time and date: 00:00:00 -- 00/00/00

go to Step 5 on page 218.

OR if the screen displays the following:

Software Installation Main Menu

go to Step 6 on page 218.

5 Set the system Time and Date.

Note: The Time and Date prompt appears when the Install Setup Program detects a system Year Date that is not in the range of 1995-2095. The responses shown below are examples of how to enter the system Time and Date:

Enter new time (hh/mm/ss)

08:00:00 <cr>

Enter new date (yy/mm/dd)

95/05/01 <cr>

08:00:00 -- 95/05/01 is the new system time and date

y <cr>

6 Select item 1 from the Main Menu if you are installing the software from the MSC card. Although the MSC card does not have a software daughterboard, item 1 is the correct selection.

If you are installing from a Software Delivery card, select item 4.

Software Installation Main Menu

1. New System Installation - From Software Daughterboard

2. System Upgrade

3. Utilities

4. New System Installation - From Software Delivery Card

[q]uit, [h]elp or [?], <cr> - redisplay

Enter selection

1 <cr>

7 Select the Feature Set to be enabled.

Note: The Feature Set selected must match the one provided with keycodes. The Feature Set names shown below are examples only.

Select Feature Set You Wish to Enable:

1. General Services (NTSKxxxx)

2. Enhanced Services (NTSKxxxx)

3. Call Center Services (NTSKxxxx)

4. Enhanced Call Center Services (NTSKxxxx)

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> redisplay

(example only:)

Enter Selection: **2 <cr>** (Enhanced Services)

8 Indicate if you want to add packages.

Feature Set Selection: Enhanced Services

Do you wish to add packages?

Select no, yes, or abort:

n <cr> (no)

y <cr> (yes)

a <cr> (abort)

Note: Abort returns you to the main menu.

If the response was **NO** go to Step 11 on page 220.

If the response was **YES** go to Step 9.

9 Select the Feature packages that you want to add.

Summary of Packages selected is:

0-2 4-5 7-14 16-25 28-29 32-64 67 70-77 79-83 86-93 95 98-104 107-111 113-116 118-120 122-125 127-129 131-133 135 137-141 167

Enter packages (s) to be added, blank line to end:

215-235 <cr>

Note: A Carriage Return, <CR>, ends selection entry or if no packages are to be added.

10 Confirm Feature Set and packages.

Your Feature Set Selection is "Enhanced Services":

Additional Packages selected: 215-235

Summary of Packages selected is:

0-2 4-5 7-14 16-25 28-29 32-64 67 70-77 79-83 86-93 95 100-104 107-111 113-116 118-120 122-125 127-129 131-133 135 137-141 167

...

...

200-208 215-235

Is this selection correct?

n <cr> (no)

y <cr> (yes)

a <cr> (abort, return to main menu)

If the response was **NO** go to Step 7 on page 219.

If the response was **YES** go to Step 11 on page 220.

11 Select a Database.

If you are installing from a Software Delivery (PCMCIA) card go to Step 12 on page 221.

IF you are installing from an MSC card, continue here:

Select database to Install:

1. Pre-Configured database - Enhanced Services

2. Basic Configuration

3. CCBR Restore File

4. Option 11/11E Software Cartridge

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> redisplay

Enter Selection: 1 or 2 <cr>

Note: Use Options 3 and 4 when upgrading an Option 11/11E to an Option 11C. There is no supported upgrade path from Option 11/11E to Option 11C Mini. Therefore, do not use these options for the Option 11C Mini.

If you selected 1 or 2, go to Step 14 on page 222.

12 Select a Database using the PCMCIA card.

If you are installing from the MSC card, go to Step 11 on page 220.

If you are installing from a Software Delivery (PCMCIA) card continue here:

Select database to Install:

1. Pre-Configured database - Enhanced Services

2. Basic Configuration

3. Archived Database

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> redisplay

Enter Selection: 3 <cr>

If you selected 3 'Archived Database', go to Step 13. If you selected 1 or 2, go to Step 14 on page 222.

13 Select an Archived Database.

The terminal screen displays the available archived databases. The following are examples only.

Archived Database available:

1. Company ABC

2. XYZ.Offices

3. Green.Packaging

[q]uit, [m]ain menu, [p]revious menu, <cr> - redisplay

14 Review ISM parameters.

Note: On a new installation, the ISM parameters displayed on the terminal screen are the default settings related to the Feature Set selection. You can accept these settings without changes or change the settings to meet the requirements of the new system.

Current ISM Parameters:

TNS (1000) **(maximum number of terminal numbers)**

ACDN (0300) **(maximum number of ACD DNs)**

AST (0100) **(maximum number of associate Sets)**

LTID (0100) **(maximum number of Logical Terminal IDs)**

RAN_CON (0012) **(default RAN connection)**

RAN_RTE (9999) **(default RAN routes)**

MUS_CON (0100) **(default MUS connection)**

BRAND (0) **(brandline)**

ACD AGENTS (1000) **(maximum number of ACD agents)**

ANALOGUE TELEPHONES (0100) **(maximum number of analogue sets)**

BRI DSL (0100) **(maximum number of Digital Subscriber Loops)**

DIGITAL TELEPHONES (0100) **(maximum number Digital sets)**

WIRELESS TELEPHONES (0) **(maximum number Wireless sets)**

TMDI D-CHANNELS (0) **(maximum number of channels)**

MOPT (0000) **(Meridian Mail option)**

Note: The above underscores represent a space.

Do you wish to change ISM parameters?

n <cr> (no change)

y <cr> (change)

a <cr> (abort, return to main menu)

If the response was **YES** go to Step 15 on page 223.

If the response was **NO** go to Step 17 on page 225.

15 Select ISM parameters.

Enter new ISM parameters, <cr> to leave as is:

TNS (1000)

ACDN (0300)

AST (0100)

LTID (0100)

RAN_CON (0012)

RAN_RTE (9999)

MUS_CON (0100)

BRAND (0)

ACD AGENTS (1000)

ANALOGUE TELEPHONES (0100)

BRI DSL (0100)

DIGITAL TELEPHONES (0100)

WIRELESS TELEPHONES (0)

TMDI D-CHANNELS (0)

MOPT (0000)

16 Confirm ISM parameters.

New ISM parameters are:

TNS (1000)

ACDN (0300)

AST (0100)

LTID (0100)

RAN_CON (0012)

RAN_RTE (9999)

MUS_CON (0100)

BRAND (0)

ACD AGENTS (1000)

ANALOGUE TELEPHONES (0100)

BRI DSL (0100)

DIGITAL TELEPHONES (0100)

WIRELESS TELEPHONES (0)

TMDI D-CHANNELS (0)

MOPT (0000)

Is this correct?

n <cr> (no)

y <cr> (yes)

a <cr> (abort, return to main menu)

If the response was **NO** go to Step 14 on page 222.

If the response was **YES** go to Step 17 on page 225.

17 Define the AUX ID.

Note: The default AUX ID is the system ID provided with the Option 11C Mini.

Security ID: 20000326

Current AUX ID: 20000326

Do you wish to change the AUX ID?

y <cr> (yes)

n <cr> (no)

a <cr> (abort, return to main menu)

If the response was **NO** go to Step 19 on page 226.

If the response was **YES** go to Step 18 on page 225.

18 Enter the AUX ID.

Enter the AUX ID, as printed on the Keycode Data Sheet. Enter a <cr> to maintain.

<cr> to maintain

12121212 <cr>

New AUX ID: 12121212

Is this correct?

y <cr> (yes)

n <cr> (no)

a <cr> (abort, return to main menu)

If the response was **NO** go to Step 17 on page 225.

If the response was **YES** go to Step 19 on page 226.

19 Review and confirm information entered.

New Installation Information Summary:

Security ID: 20000326

Aux ID: 20000326

Added Pkgs: 215-235

Feature Set: Enhanced Business

Database: Company.ABC

S/W Release: 2304C

ISM Parameters

TSN: 1000 1000

AGNT: 1000 1000

ACDN: 0100 0100

AST: 0000 0150

DSL: 0000 0100

LTID: 0000 0000

RAN_CON (0010)

RAN_RTE (9999)

MUS_CON (0100)

BRAND (0)

MOPT: 0000 0000

Note: The terminal screen displays both the old and the new parameter values.

Is this correct?

y <cr> (yes)

n <cr> (no)

a <cr> (abort, return to main menu)

If the response was **NO** go to Step 7 on page 219.

If the response was **YES** go to Step 20 on page 227.

20 Enter the keycodes from the Keycode Data Sheet.

Enter new Keycodes:

Key 1:

Key 2:

Key 3:

xxxxxxxx <cr>

yyyyyyyy <cr>

zzzzzzzz <cr>

After you enter the last keycode, the system displays a successful or unsuccessful message. Follow the instructions given below.

'Keycode validation successful'

WARNING A system restart will occur as part of the software installation process"

If the **successful** message appears go to Step 21 on page 227.

'Keycode validation unsuccessful'

If the **unsuccessful** message appears, repeat this step (Step 20).

After three unsuccessful keycode validation attempts, the following message appears:

Keycode validation unsuccessful.

Installation aborted...returning to main menu.

21 Complete the software installation.

Are you sure you wish to perform the installation?

y <cr> (yes)

n <cr> (no)

a <cr> (abort, return to main menu)

If the response was **YES,** this is the end of the Software Installation program. The system will now start to sysload. See Procedure 27 Step 5 on page 210.

If the response was **NO,** go to Step 6 on page 218.

End of Procedure

Chapter 17 — Connecting the telephones

This chapter contains instructions for connecting telephones to the cross-connect terminal. Refer to "Telephones and Attendant Consoles" on page 36 for a list of telephones and Attendant Consoles supported by the Option 11C Mini.

This chapter contains the following procedures:

- Procedure 30: "Cross connecting telephones" on page 230
- Procedure 31: "Connecting telephones without a PFTU" on page 234
- Procedure 32: "Connecting 500/2500-type telephones with a PFTU" on page 234
- Procedure 33: "Connecting an off-premise telephone" on page 236
- Procedure 34: "Connecting Attendant Console" on page 236
- Procedure 35: "Activating a default model telephone with a character display" on page 246
- Procedure 36: "Activating a default model telephone without a character display" on page 248
- Procedure 37: "Activating a customized telephone" on page 249
- Procedure 38: "Activating a customized telephone" on page 250

Refer to the instructions provided with the telephone or Attendant Console and to the following documents for detailed information about installing telephones and Attendant Consoles:

- *Meridian 1 Telephone and Attendant Console Installation* (553-3001-215)
- *Meridian 1 European Digital Telephones* (553-3001-114)
- *M3900 Series Meridian Digital Telephone Description, Installation, and Administration* (553-3001-216)

Refer to "Appendix A – Preprogrammed data" on page 285 for information about preprogrammed data.

Before you continue, install the cable from the slot that contains the line card associated with the telephone being connected. Refer to "Chapter 13 — Installing and connecting the cross-connect terminal" on page 169, if you require additional cable installation.

WARNING

Always use caution when installing or modifying telephone lines. Do not install telephone wiring during a lightning storm. Do not install telephone jacks in wet locations unless the jack is designed for wet locations. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Cross connecting telephones

Connect the telephones according to Figures 65 and 66. Figure 67 on page 233 shows the cross-connect information for the 48-port Digital Line Card.

Procedure 30
Cross connecting telephones

1 Locate the telephone terminations at the cross-connect terminal.

2 Connect the Z-type cross-connect wire to the leads of the telephone.

3 Locate line circuit card (TN) terminations at the cross-connect terminal.

4 **Connect the other end of the cross-connect wire to the assigned TN terminal block.**

End of Procedure

Figure 65
NE-500/2500-type telephone cross connections

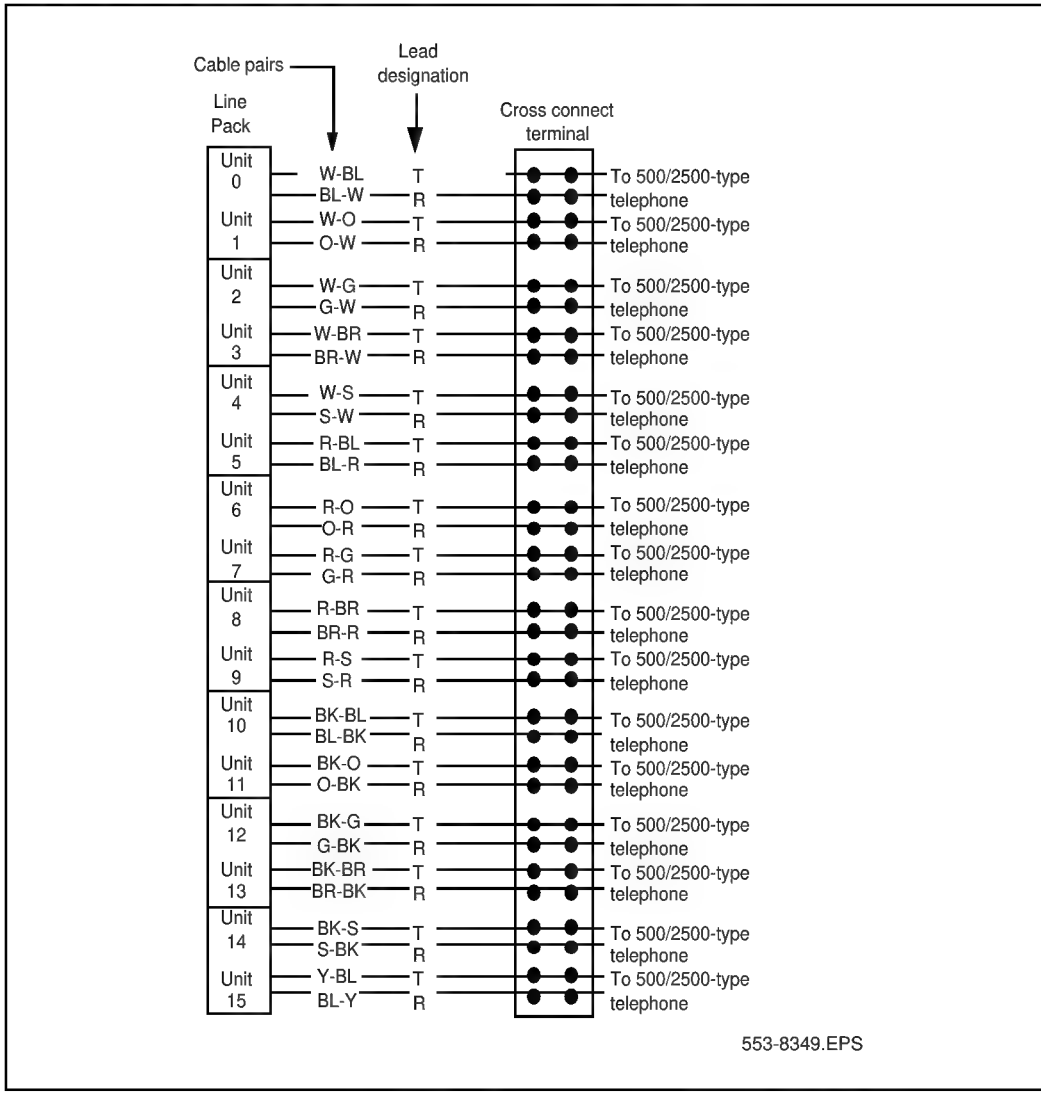


Figure 66
Meridian Digital Telephone cross connections

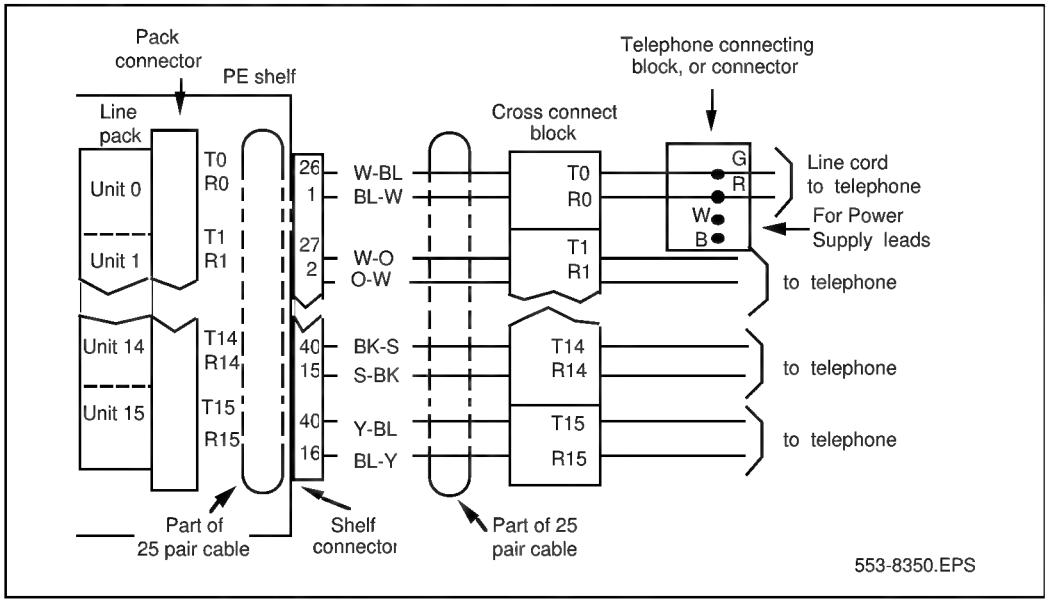
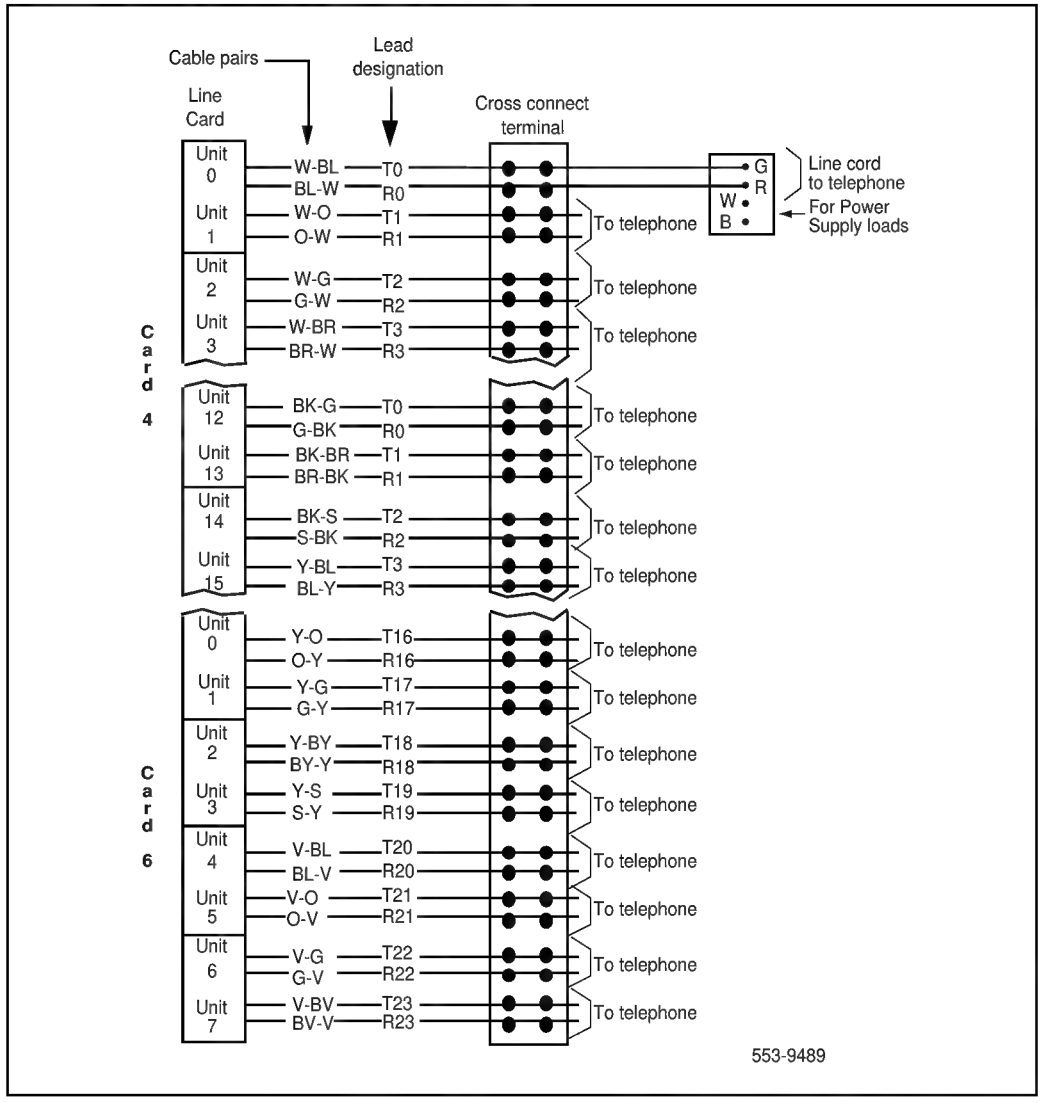


Figure 67
48-port Digital Line Card cross connections



Note: Figure 67 is an example which shows the cross connections for the Card 4/Card 6 connector. The Card 5/Card 6 connector provides cable pairs for Card 5 units 0-15 and Card 6 units 8-15.

Connecting telephones without a PFTU

Procedure 31
Connecting telephones without a PFTU

1 **Locate the telephone terminations on the cross-connect terminal.**

2 **Connect one end of the cross-connect wire to the leads of the telephone.**

3 **Locate the line card terminations on the cross-connect terminal.**

Refer to Table 49 on page 239.

4 **Connect the other end of the cross-connect wire to the assigned TN terminal block.**

Table 52 on page 242 provides default DN assignments.

Now, you can activate the telephone, as described on page 244.

End of Procedure

Connecting analog (500/2500-type) telephones with a PFTU

Procedure 32
Connecting 500/2500-type telephones with a PFTU

1 **Locate the telephone terminations on the cross-connect terminal.**

2 **Connect one end of the cross-connect wire to the leads of the telephone.**

3 **Locate the PFTU connections (unit PFT 1 through PFT 5) assigned to this telephone at the cross-connect terminal.**

Refer to Table 50 on page 239.

4 **Connect the other end of the cross-connect wire to the pair assigned to the telephone on the PFTU.**

5 **Connect a second cross-connect wire to the pair assigned to the line card on the PFTU.**

6 **Locate the line card terminations on the cross-connect terminal.**

Refer to Table 49 on page 239.

7 **Connect the other end of the cross-connect wire to the assigned TN terminal block.**

Table 52 on page 242 provides the default DN assignments.

Now, you can activate the telephone, as described on page 244.

End of Procedure

Connecting off-premise telephones

Connect off-premise analog (500/2500-type) telephones through an NTAK92AA Off-Premise Protection Module. Each module can connect up to four analog (500/2500-type) telephones and can interface with one of the following:

- NT1R20 Off-Premise Station Analog Line Card
- NT8D03 Analog Line Card
- NT8D09 Message Waiting Line Card

WARNING

The message waiting line card produces -150 volts which is considered hazardous on off-premise telephones. Make sure that the -150 V is disabled on off-premise telephones.

The voltage is disabled when the telephone's Class of Service (CLS) is Message Waiting Lamp Denied (LPD) and Message Waiting Denied (MWD) in Overlay 10.

Refer to the *X11 Software guides* for information about Overlay 10.

Do not assign a Class of Service of LPA or MWA to an off-premise telephone.

Procedure 33
Connecting an off-premise telephone

1 **Install the NTAK92AA Off-Premise Protection Module on the wall using four #10 1/2 in (minimum) screws.**

2 **Connect a #6 AWG (#40 Metric Wire Gauge) from the grounding lug at the bottom of the NTAK92AA Off-Premise Protection Module to an earth ground. Refer to Figure 68 on page 237.**

Note: In the UK, use a 2 mm^2 (#6 AWG) ground lug. In Europe, use a #6 AWG (16 mm^2) ground lug.

WARNING
If connecting to a message waiting line card, unseat the card from its assigned slot before continuing with the next step.

3 **Connect two NTAK9204 cables (one from connector J1 and one from connector J2) from the protection module to the cross-connect terminal.**

Terminate the cables as shown in Figure 65 on page 231.

4 **Cross-connect the J1 cable to the Tip and Ring connections coming from the line card.**

Table 52 on page 242 provides the default DN assignments.

5 **Cross-connect the J2 cable to the off-premise telephone.**

6 **Install the regulatory label provided with the Off-Premise Protection Module on the inside right-hand wall of the chassis.**

7 **Install the line card in its assigned position.**

Now, you can activate the telephone, as described on page 244.

End of Procedure

Connecting an Attendant Console

Procedure 34
Connecting Attendant Console

1 **Locate the Attendant Console terminations at the cross-connect terminal.**

2 **Locate the line card terminations at the cross-connect terminal.**

3 **With cross-connect wire, connect the line card and other connections to the console as shown in Figure 69 on page 238.**

End of Procedure

Figure 68
NTAK92AA Off-Premise Protection Module connections

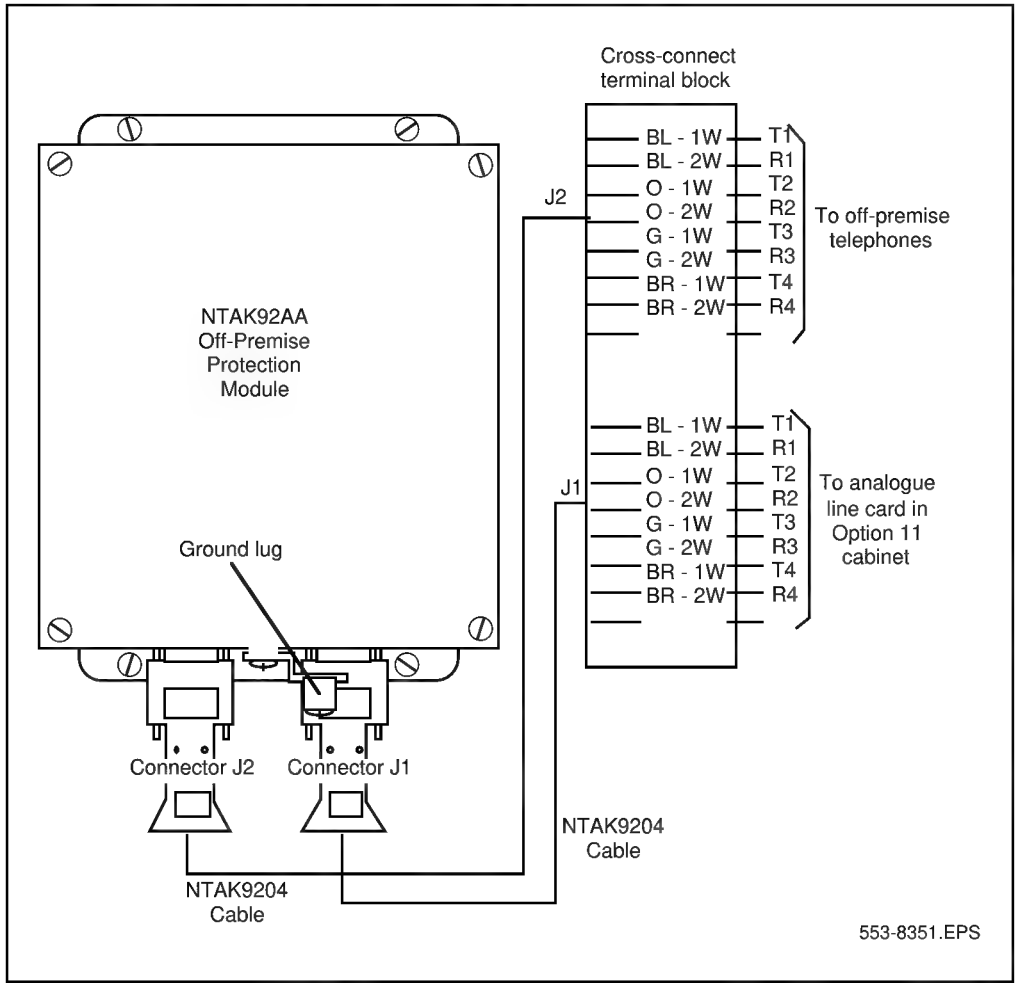
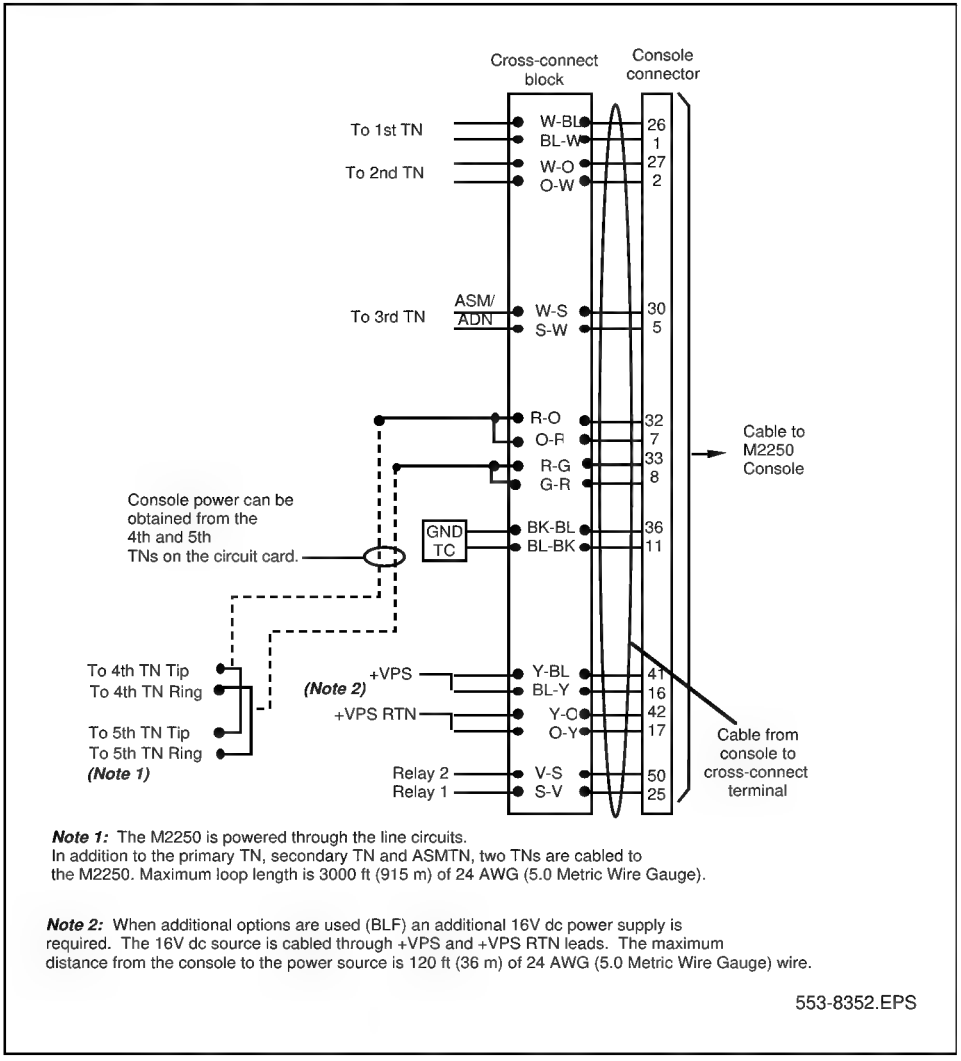


Figure 69
Attendant Console connections



Note 1: The M2250 is powered through the line circuits. In addition to the primary TN, secondary TN and ASMTN, two TNs are cabled to the M2250. Maximum loop length is 3000 ft (915 m) of 24 AWG (5.0 Metric Wire Gauge).

Note 2: When additional options are used (BLF) an additional 16V dc power supply is required. The 16V dc source is cabled through +VPS and +VPS RTN leads. The maximum distance from the console to the power source is 120 ft (36 m) of 24 AWG (5.0 Metric Wire Gauge) wire.

553-8352.EPS

Table 49
Terminal Number assignments — Main Chassis and Chassis Expander

Physical slot	Logical slot	First TN...Last TN	Cable	Chassis
1	1	01 00...01 15	Card 1	Main
2	2	02 00...02 15	Card 2	Main
3	3	03 00...03 15	Card 3	Main
4 5 6	4 5 6	04 00...04 15 05 00...05 15 06 00...06 07 06 08...06 15	Card 4/Card 6 (see note) Card 5/Card 6 (see note) Card 4/Card 6 (see note) Card 5/Card 6 (see note)	Main Main Main Main
7	7	07 00...07 15	Card 7	Expander
8	8	08 00...08 15	Card 8	Expander
9	9	09 00...09 15	Card 9	Expander
10	10	10 00...10 15	Card 10	Expander

Note: Refer to the labels on the back of the Main Chassis. See Figure 52 on page 179.

Table 50
Power Failure Transfer Unit connections

QUA6 J1 Cable			
Function	**Pair**	**Color**	**Connects to**
PFT 1	5T 5R	W-S S-W	Connect to the telephone
	6T 6R	R-BL BL-R	Connect to the telephone line card
	7T 7R	R-O O-R	Connect to the central office trunk
	8T 8R	R-G G-R	Connect to the trunk line card

Table 50
Power Failure Transfer Unit connections (Continued)

PFT 2	9T 9R	R-BR BR-R	Connect to the telephone
	10T 10R	R-S S-R	Connect to the telephone line card
	11T 11R	BK-BL BL-BK	Connect to the central office trunk
	12T 12R	BK-O O-BK	Connect to the trunk line card
PFT 3	13T 13R	BK-G G-BK	Connect to the telephone
	14T 14R	BK-BR BR-BK	Connect to the telephone line card
	15T 15R	BK-S S-BK	Connect to the central office trunk
	16T 16R	Y-BL BL-Y	Connect to the trunk line card
PFT 4	17T 17R	Y-O O-Y	Connect to the telephone
	18T 18R	Y-G G-Y	Connect to the telephone line card
	19T 19R	Y-BR BR-Y	Connect to the central office trunk
	20T 20R	Y-S S-Y	Connect to the trunk line card
PFT 5	21T 21R	V-BL BL-V	Connect to the telephone
	22T 22R	V-O O-V	Connect to the telephone line card
	23T 23R	V-G G-V	Connect to the central office trunk
	24T 24R	V-BR BR-V	Connect to the trunk line card

Table 51
Color combinations of cable pairs

Color	W-Bl Bl-W	W-O O-W	W-G G-W	W-BR BR-W	W-S S-W	R-BL BL-R	R-O O-R	R-G G-R
Unit	0	1	2	3	4	5	6	7
Color	R-BR BR-R	R-S S-R	BK-BL BL-BK	BK-O O-BK	BK-G G-BK	BK-BR BR-BK	BK-S S-BK	Y-B B-Y
Unit	8	9	10	11	12	12	14	15

Table 52 lists the default DN assignments for the Main Chassis and Chassis Expander.

Table 52
Default DN assignments for the Main Chassis and Chassis Expander

	Cable	Unit	Default Directory Number (DN)							
Main Chassis	Card 1	0 - 7	2200	2201	2202	2203	2204	2205	2206	2207
	Card 1	8 - 15	2208	2209	2210	2211	2212	2213	2214	2215
	Card 2	0 - 7	2216	2217	2218	2219	2220	2221	2222	2223
	Card 2	8 - 15	2224	2225	2226	2227	2228	2229	2230	2231
	Card 3	0 - 7	2232	2233	2234	2235	2236	2237	2238	2239
	Card 3	8 - 15	2240	2241	2242	2243	2244	2245	2246	2247
	Card 4	0 - 7	2248	2249	2250	2251	2252	2253	2254	2255
	Card 4	8 - 15	2256	2257	2258	2259	2260	2261	2262	2263
	Card 5	0 - 7	2264	2265	2266	2267	2268	2269	2270	2271
	Card 5	8 - 15	2272	2273	2274	2275	2276	2277	2278	2279
	Card 6	0 - 7	2280	2281	2282	2283	2284	2285	2286	2287
	Card 6	8 - 15	2288	2289	2290	2291	2292	2293	2294	2295
Chassis Expander	Card 7	0 - 7	2296	2297	2298	2299	2300	2301	2302	2303
	Card 7	8 - 15	2304	2305	2306	2307	2308	2309	2310	2311
	Card 8	0 - 7	2312	2313	2314	2315	2316	2317	2318	2319
	Card 8	8 - 15	2320	2321	2322	2323	2324	2325	2326	2327
	Card 9	0 - 7	2328	2329	2330	2331	2332	2333	2334	2335
	Card 9	8 - 15	2336	2337	2338	2339	2340	2341	2342	2343
	Card 10	0 - 7	2344	2345	2346	2347	2348	2349	2350	2351
	Card 10	8 - 15	2352	2353	2354	2355	2356	2357	2358	2359

Table 53 lists the default DN assignments for the Main Chassis and Chassis Expander for Germany.

Table 53
Default DN assignments for the Main Chassis and Chassis Expander (Germany)

	Cable	Unit	Default Directory Number (DN)							
Main Chassis	Card 1	0 - 7	100	101	102	103	104	105	106	107
	Card 1	8 - 15	108	109	110	111	112	113	114	115
	Card 2	0 - 7	116	117	118	119	120	121	122	123
	Card 2	8 - 15	124	125	126	127	128	129	130	131
	Card 3	0 - 7	132	133	134	135	136	137	138	139
	Card 3	8 - 15	140	141	142	143	144	145	146	147
	Card 4	0 - 7	148	149	150	151	152	153	154	155
	Card 4	8 - 15	156	157	158	159	160	161	162	163
	Card 5	0 - 7	164	165	166	167	168	169	170	171
	Card 5	8 - 15	172	173	174	175	176	177	178	179
	Card 6	0 - 7	180	181	182	183	184	185	186	187
	Card 6	8 - 15	188	189	190	191	192	193	194	195
Chassis Expander	Card 7	0 - 7	196	197	198	199	200	201	202	203
	Card 7	8 - 15	204	205	206	207	208	209	210	211
	Card 8	0 - 7	212	213	214	215	216	217	218	219
	Card 8	8 - 15	220	221	222	223	224	225	226	227
	Card 9	0 - 7	228	229	230	231	232	233	234	235
	Card 9	8 - 15	236	237	238	239	240	241	242	243
	Card 10	0 - 7	244	245	246	247	248	249	250	251
	Card 10	8 - 15	252	253	254	255	256	257	258	259

Cross-connecting terminal Digital Subscriber Loops

Refer to *ISDN BRI Administration and Maintenance Guide (553-3011-311)* for a complete description of terminal Digital Subscriber Loops (DSL) cross-connecting and installation.

Activating telephones

Activating telephones is not difficult. Activate each telephone by performing a procedure on the telephone. Automatic Set Configuration is the software feature used to activate telephone sets.

> ***Note:*** You cannot activate the data feature using the procedures in this chapter. To program a telephone with the data feature, configure it in LD 11 with Data Class of Service. See the *X11 Software Administration Guide*.

This chapter contains procedures for activating the following models of telephones:

- a default model with a default extension number
- a customized model with a customized extension number

This chapter provides these procedures for telephones with and without character displays.

Telephone tones

There are a number of different telephone tones. Table 54 includes tones that you hear during telephone activation. Table 55 includes tones that you hear during telephone activation in Germany.

Table 54
Telephone tones

Tone	Description
Dial tone	A continuous tone.
Special dial tone	Three beeps followed by continuous dial tone.
Overflow tone	Like a busy tone, except faster and higher.
Relocation tone	A short high-pitched beep that continues for 4 seconds, followed by silence.

Table 55
Telephone tones for Germany

Tone	Description	Specification
Dial tone	Sequences of three short beeps with a pause between cycles	Beep: 420 Hz tone for 200 ms Pause between beeps: 275 ms Pause between cycles: 875 ms
Special dial tone	Six short beeps followed by continuous tone	Beep: 420 Hz tone for 125 ms Pause between beeps: 125 ms
Overflow tone	Continuous beeping, like a busy tone	Beep: 420 Hz tone for 200 ms Pause: 600 ms
Relocation tone	Short, high pitched beep followed by silence	Beep: 1400 Hz tone for 1.4 seconds

Note 1: Before you activate a telephone, make sure that you have decided on its final location. Also, know the model number assigned to the telephone and if it is to be customized.

Note 2: When you are activating Meridian Digital telephones, remember that they are different from the older Meridian Modular telephones. Meridian Modular telephones can have a combined total of 128 model telephones. Meridian Digital telephones can have 128 models for each type of telephone. When you activate a Meridian Digital telephone, select the model associated with that telephone type, or the telephone will not work.

Activating a default model with a character display

Procedure 35
Activating a default model telephone with a character display

1 **Plug the telephone set into the jack and wait 20 seconds before you lift the handset. If you do not receive a dial tone, replace the handset and wait another 10 seconds before lifting the handset again. Repeat this procedure until you receive dial tone.**

If successful, the character display shows either "MODEL? X" (if the telephone relocation feature is **not** in use) or "RELOC OR MODEL? X" (if the telephone relocation feature **is** in use). "X" represents the default model for the telephone that you are activating.

Note: If you do not see the prompt "MODEL X" after lifting the handset, disconnect the telephone from the wall jack. Wait five seconds, and insert the telephone into the jack again. The telephone now shows "MODEL X" when you lift the handset.

Note: The system requires the 20 second time interval to determine if the set is new or if it is being relocated using the Modular Telephone Relocation feature.

2 **Press the pound key (#) to select the default model.**

The character display shows "OK, EXTENSION? XXXX". "XXXX" represents the default extension number for this telephone type.

3 **Press the pound key again to select the default extension number.**

You hear the relocation tone. The character display shows "OK".

OR

If the extension number is already in use by another telephone, you hear the special dial tone. If the telephone has a display it shows "MULTI-LINE, EXTENSION?".

To accept the default extension number, press the pound key.

To select a new extension number, manually enter an extension number and press the pound key.

OR

If the extension number is not available for use, the character display shows "ERROR, EXTENSION?" and you hear overflow tone.

This situation occurs when you select an extension number manually, or when extension numbers are entered for additional keys. A default extension number will not be offered if it is not available.

You must repeat step 3 and manually enter a new extension number.

Note 1: If other keys require secondary extension numbers, you are prompted until you enter all of the required extension numbers for the model.

Note 2: These extension numbers cannot be defaulted. The text display that prompts for additional extension numbers is "KEY kk EXT?" where "kk" represents the key number requiring the extension number.

Note 3: Each prompt for another extension number is accompanied by special dial tone. When you are programming an extension number, the lamp associated with that number on the telephone is lit.

4 **Hang up the telephone receiver.**

After approximately 10 seconds, the telephone is configured.

Note: If you replace the handset before completing the prompt sequence, the installation will automatically fail. This can be useful if you make an error and want to restart the procedure.

End of Procedure

Activating a default model without a character display

Procedure 36
Activating a default model telephone without a character display

1 **Plug the telephone set into the jack and wait 20 seconds before you lift the handset. If you do not receive dial tone, replace the handset and wait another 10 seconds before going off-hook again. Repeat this procedure until you receive dial tone.**

Note: The system requires the 20 second time interval to determine if the set is new or if it is being relocated using the Modular Telephone Relocation feature.

2 **Press the pound key (#) to select the default model.**

3 **Press the pound key (#) again to select the default extension number.**

You hear a short, high-pitched beep which lasts four seconds followed by silence (relocation tone).

Note: If the extension number is already in use by another telephone, you hear three beeps followed by continuous dial tone (special dial tone).

To accept the default extension number press the pound key (#).

To select a new extension number, manually enter an extension number and press the pound key.

If the extension number is not available for use, you hear a fast, high-pitched broken tone (overflow tone). This happens when you select an extension number manually or when extension numbers are entered for additional keys. A default extension number is not offered if it is not available. You must repeat Step 3 on page 248, and you must manually enter a new extension number.

Note: If other keys require secondary extension numbers, you are prompted until you enter all of the required extension numbers for the model. These extension numbers cannot be defaulted. You are prompted for each additional extension number with three beeps followed by continuous dial tone (special dial tone). When you are programming an extension number, the lamp associated with that number on the telephone is lit.

End of Procedure

Activating a customized model with a character display

Procedure 37
Activating a customized telephone

1 **Plug the telephone set into the jack and wait 20 seconds before you lift the handset. If you do not receive dial tone, replace the handset and wait another 10 seconds before going off-hook again. Repeat this procedure until you receive dial tone.**

If successful, the character display shows either "MODEL? X" (if the telephone relocation feature is **not** in use) or "RELOC OR MODEL? X" (if the telephone relocation feature **is** in use). "X" represents the default model for the telephone that you are activating.

Note 1: If you do not see the prompt "MODEL X" after lifting the handset, disconnect the telephone from the wall jack. Wait five seconds and plug the telephone into the jack again. The telephone now shows "MODEL X" when you lift the handset.

Note 2: The system requires the 20 second time interval to determine if the set is new or if it is being relocated using the Modular Telephone Relocation feature.

2 **Enter the digits associated with the customized model and press the pound key (#).**

Dial tone disappears after you press the first digit. You hear special dial tone after you press the pound key. If you enter a valid model number, the character display reads "OK, EXTENSION?". If you enter an invalid model, the previous prompt is reissued and you hear overflow tone.

3 **Enter the customized extension number and press the pound key.**

You hear relocation tone. The character display shows "OK".

OR

If the extension number is already in use by another telephone, you hear special dial tone again. The character display shows "MULTI-LINE, EXTENSION?".

OR

If the extension number is not available for use, you hear overflow tone. The character display shows "ERROR, EXTENSION?" and you must repeat this step.

Note: If other keys require secondary extension numbers, you are prompted until you enter all of the required extension numbers for the model. These extension numbers cannot be defaulted. The text display prompting for more extension numbers is "KEY kk EXT?" where "kk" represents the key number requiring the extension number. Each prompt for another extension number is accompanied by special dial tone. When you are programming an extension number, the lamp associated with that number on the telephone is lit.

4 **Hang up the telephone handset.**

After approximately 10 seconds, the telephone is configured.

Note: If you replace the handset before you complete the prompt sequence, the installation automatically fails. This can be useful if you make an error and want to restart the procedure.

End of Procedure

Activating a customized model without a character display

Procedure 38
Activating a customized telephone

1 **Plug the telephone set into the jack and wait 20 seconds before you lift the handset. If you do not receive dial tone, replace the handset and wait another 10 seconds before going off-hook again. Repeat this procedure until you receive dial tone.**

Note: The system requires the 20 second time interval to determine if the set is new or if it is being relocated using the Modular Telephone Relocation feature.

2 **Enter the digits associated with the customized model and press the pound key (#).**

Dial tone disappears after you press the first digit. You hear three beeps followed by continuous dial tone (special dial tone) after you press the pound key.

3 **Enter the customized extension number and press the pound key.**

You hear a short high-pitched beep which lasts four seconds, followed by silence (relocation tone).

If the extension number is already in use by another telephone, you hear special dial tone again.

If the extension number is not available for use, you hear a fast, high-pitched broken tone (overflow tone), and you must repeat this step.

4 **Hang up the telephone handset.**

After approximately 10 seconds, the telephone is configured.

Note: If other keys require secondary extension numbers, you are prompted until you enter all of the required extension numbers for the model. These extension numbers cannot be defaulted. You are prompted for each additional extension number with three beeps followed by continuous dial tone (special dial tone). When you are programming an extension number, the lamp associated with that number on the telephone is lit.

End of Procedure

Activating terminals on a DSL

Refer to the *ISDN BRI Administration and Maintenance Guide (553-3011-311)* for information about activating and initializing the terminals that can be connected to a terminal DSL.

Chapter 18 — Connecting the trunks

This chapter describes how to connect trunks directly to the trunk card, with or without the use of a Power Failure Transfer Unit (PFTU). This chapter contains the following procedures:

- Procedure 39: "Connecting trunks without a PFTU" on page 254
- Procedure 40: "Connecting trunks with a PFTU" on page 254
- Procedure 41: "Activating a default model trunk" on page 275
- Procedure 42: "Activating a selected model trunk" on page 276

The QUA6 PFTU operates with loop start and ground start CO trunks. However, with ground-start trunks the related telephone set must have a ground-start button.

During initial software installation on the Option 11C Mini, you can load a default database, containing preprogrammed trunk data, into software. If necessary, you can modify the default data at any time to meet the specific needs of a customer. For a description of how to modify preprogrammed trunking data, refer to "Appendix A – Preprogrammed data" on page 285 in this Guide.

WARNING

Always use caution when installing or modifying telephone lines. Avoid installing telephone wiring during a lightning storm. Do not install telephone jacks in wet locations unless the jack is designed for wet locations. Never touch uninsulated telephone wiring unless the line is disconnected at the network interface.

Connecting trunks without a PFTU

Procedure 39
Connecting trunks without a PFTU

1 **From the assignment record, determine the location of the trunk connection and its associated Terminal Number (TN) at the cross-connect terminal.**

2 **With cross-connect wire, connect the trunk to the TN.**

Make sure that the wiring is not reversed and is on the correct terminals.

Tables 57 to 59 list the connections for trunks. For trunk connections for Europe, see Tables 60 to 68. For trunk connections for the UK, see Tables 69 to 75.

End of Procedure

Connecting trunks with a PFTU

Procedure 40
Connecting trunks with a PFTU

1 **Locate the PFTU terminal blocks at the cross-connect terminal.**

2 **Cross-connect the first pair of the assigned PFT to the telephone.**

See Table 56 on page 255 for PFTU connections.

3 **Cross-connect the second pair of the PFT to the TN assigned to the telephone.**

4 **Cross-connect the third pair of the PFT to the central office trunk.**

5 **Cross-connect the third pair of the PFT to the TN assigned to the trunk.**

6 **Repeat for each trunk assigned to the PFTU.**

End of Procedure

Table 56
Power Failure Transfer Unit connections

QUA6 J1 cable				
Function	**Pair**	**Color**	**Connects to**	**Comments**
PFT 1	5T 5R	W-S S-W	Connect to the telephone	
	6T 6R	R-BL BL-R	Connect to the telephone line card	Connect to TN assigned to the telephone
	7T 7R	R-O O-R	Connect to the central office trunk	
	8T 8R	R-G G-R	Connect to the trunk line card	Connect to TN assigned to the trunk
PFT 2	9T 9R	R-BR BR-R	Connect to the telephone	
	10T 10R	R-S S-R	Connect to the telephone line card	Connect to TN assigned to the telephone
	11T 11R	BK-BL BL-BK	Connect to the central office trunk	
	12T 12R	BK-O O-BK	Connect to the trunk line card	Connect to TN assigned to the trunk
PFT 3	13T 13R	BK-G G-BK	Connect to the telephone	
	14T 14R	BK-BR BR-BK	Connect to the telephone line card	Connect to TN assigned to the telephone
	15T 15R	BK-S S-BK	Connect to the central office trunk	
	16T 16R	Y-BL BL-Y	Connect to the trunk line card	Connect to TN assigned to the trunk
PFT 4	17T 17R	Y-O O-Y	Connect to the telephone	
	18T 18R	Y-G G-Y	Connect to the telephone line card	Connect to TN assigned to the telephone
	19T 19R	Y-BR BR-Y	Connect to the central office trunk	
	20T 20R	Y-S S-Y	Connect to the trunk line card	Connect to TN assigned to the trunk

P F T 5	21T 21R	V-BL BL-V	Connect to the telephone	
	22T 22R	V-O O-V	Connect to the telephone line card	Connect to TN assigned to the telephone
	23T 23R	V-G G-V	Connect to the central office trunk	
	24T 24R	V-BR BR-V	Connect to the trunk line card	Connect to TN assigned to the trunk

Trunk connections

NT8D14 Universal trunk card

The Universal trunk card provides eight analog trunks that can function in the modes shown in Table 57.

Table 57
NT8D14 Universal trunk — modes and option settings

Modes	Location	Jumper strap
Central (CO)	J1, J2	OFF
2- way TIE trunk (loop Dial Repeat)	J1, J2	OFF
2 - way TIE trunk (Outgoing Incoming Dial)	J1, J2	OFF
Recorded Announcement (RAN)	J1, J2	OFF
Paging trunk	J1, J2	OFF
Japan CO/DID operation	J1, J2	OFF
DID operation Loop length>2000 ¾	J1, J2	ON
DID operation Loop length <2000¾	J1, J2	OFF
Note: OFF indicates that no strap is present. J1 and J2 locations apply to all eight trunks.		

Refer to Table 58 on page 257 for the connections to the NT8D14 Universal trunk at the cross-connect terminal.

Table 58
NT8D14 Universal trunk connections

Cable from chassis			RAN mode	Paging mode	All other modes
Pair	**Color**		**Designations**		
1T 1R	W-BL BL-W	Unit 0	T0 R0	T0 R0	T0 R0
2T 2R	W-O O-W		CP MB	A PG	
3T 3R	W-G G-W	Unit 1	T1 R1	T1 R1	T1 R1
4T 4R	W-BR BR-W		CP MB	A PG	
5T 5R	W-S S-W	Unit 2	T2 R2	T2 R2	T2 R2
6T 6R	R-BL BL-R		CP MB	A PG	
7T 7R	R-O O-R	Unit 3	T3 R3	T3 R3	T3 R3
8T 8R	R-G G-R		CP MB	A PG	
9T 9R	R-BR BR-R	Unit 4	T4 R4	T4 R4	T4 R4
10T 10R	R-S S-R		CP MB	A PG	
11T 11R	BK-BL BL-BK	Unit 5	T5 R5	T5 R5	T5 R5
12T 12R	BK-O O-BK		CP MB	A PG	
13T 13R	BK-G G-BK	Unit 6	T6 R6	T6 R6	T6 R6
14T 14R	BK-BR BR-BK		CP MB	A PG	
15T 15R	BK-S S-BK	Unit 7	T7 R7	T7 R7	T7 R7
16T 16R	Y-BL BL-Y		CP MB	A PG	
Note: Remaining pairs are spare					

NT8D15 E&M Trunk card

Table 59
NT8D15 E&M Trunk card

Cables Card 1 through Card 10 from chassis			2W Paging mode	2W Type 1 mode	4W Type 1 mode	4W Type 2 mode
Pair	**Color**		**Designations**			
1T 1R	W-BL BL-W	Unit 0	T0 R0	T0 R0	TA TB	TA TB
2T 2R	W-O O-W				RA RB	RA RB
3T 3R	W-G G-W			E M	E M	EA EB
4T 4R	W-BR BR-W		A PG		ESC ESCG	MA MB
5T 5R	W-S S-W	Unit 1	T1 R1	T1 R1	TA TB	TA TB
6T 6R	R-BL BL-R				RA RB	RA RB
7T 7R	R-O O-R			E M	E M	EA EB
8T 8R	R-G G-R		A PG		ESC ESCG	MA MB
9T 9R	R-BR BR-R	Unit 2	T2 R2	T2 R2	TA TB	TA TB
10T 10R	R-S S-R				RA RB	RA RB
11T 11R	BK-BL BL-BK			E M	E M	EA EB
12T 12R	BK-O O-BK		A PG		ESC ESCG	MA MB
13T 13R	BK-G G-BK	Unit 3	T3 R3	T3 R3	TA TB	TA TB
14T 14R	BK-BR BR-BK				RA RB	RA RB
15T 15R	BK-S S-BK			E M	E M	EA EB
16T 16R	Y-BL BL-Y		A PG		ESC ESCG	MA MB

Note: A and B are the transmit and receive pairs, where:
TA = Transmit Tip, and RA = Receive Tip
TB = Transmit Ring, and RB = Receive Ring

NT6D70 SILC and NT6D71 UILC cards

Refer to *ISDN BRI Administration and Maintenance Guide (553-3011-311)* for a complete description of trunk DSL installation and connections.

Trunk connections (Europe)

E&M TIE trunk card (2-Wire)

Note: Refer to the *Intelligent Peripheral Equipment Supplements* for a complete description of European circuit cards.

Table 60
E&M TIE trunk card (2-wire)

Cables Card 1 through Card 10 from chassis				Column 1 Paging	Column 2 Paging	Column 3 Type 5(BPO)
Pair	**Color**	**Unit #**	**Pins**	**Lead Designations**		
1T 1R	W-O O-W	Unit 0	27 2	T0 R0	T0 R0	T0 R0
2T 2R	W-BR BR-W		29 4	A PG	SIGB SIGA	E M
3T 3R	R-BL BL-R	Unit 1	31 6	T1 R1	T1 R1	T1 R1
4T 4R	R-G G-R		33 8	A PG	SIGB SIGA	E M
5T 5R	R-S S-R	Unit 2	35 10	T2 R2	T2 R2	T2 R2
6T 6R	BK-O O-BK		37 12	A PG	SIGB SIGA	E M
7T 7R	BK-BR BR-BK	Unit 3	39 14	T3 R3	T3 R3	T3 R3
8T 8R	Y-BL BL-Y		41 16	A PG	SIGB SIGA	E M

Table 61
E&M 2-wire Type 2

Lead designations	Pins	Pair color	Unit number
T0 R0	27 2	W-O O-W	
E1 E2	28 3	W-G G-W	Unit 0
M1 M2	29 4	W-G G-W	
T1 R1	31 6	R-BL BL-R	
E1 E2	32 7	R-O O-R	Unit 1
M1 M2	33 8	R-G G-R	
T2 R2	35 10	R-S S-R	
E1 E2	36 11	BK-BL BL-BK	Unit 2
M1 M2	37 12	BK-O O-BK	
T3 R3	39 14	BK-BR BR-BK	
E1 E2	40 15	BK-S S-BK	Unit 3
M1 M2	41 16	Y-BL BL-Y	

E&M TIE trunk card (4-Wire)

Table 62
E&M TIE trunk card (4-wire)

Cables Card 1 through Card 10 from chassis				Column 1 Type 1 & 5	Column 2 Type 1 & 5
Pair	**Color**	**Unit #**	**Pins**	**Lead Designations**	
1T 1R	W-BL BL-W	Unit 0	26 1	RA RB	TA TB
2T 2R	W-O O-W		27 2	TA TB	RA RB
3T 3R	W-G G-W		28 3	E M	E M
4T 4R	W-S S-W	Unit 1	30 5	RA RB	TA TB
5T 5R	R-BL BL-R		31 6	TA TB	RA RB
6T 6R	R-O O-R		32 7	E M	E M
7T 7R	R-BR BR-R	Unit 2	34 9	RA RB	TA TB
8T 8R	R-S S-R		35 10	TA TB	RA RB
9T 9R	BK-BL BL-BK		36 11	E M	E M
10T 10R	BK-G G-BK	Unit 3	38 13	RA RB	TA TB
11T 11R	BK-BR- BR-BK		39 14	TA TB	RA RB
12T 12R	BK-S S-BK		40 15	E M	E M

Note: The cable pair designated TA, TB is the transmit pair. The pair designated RA, RB is the receive pair.

Table 63
E&M TIE trunk card (4-wire)

Cables Card 1 through Card 10 from chassis				Column 1 Type 2	Column 2 Type 2
Pair	**Color**	**Unit #**	**Pins**	**Lead Designations**	
1T 1R	W-BL BL-W	Unit 0	26 1	RA RB	RA RB
2T 2R	W-O O-W		27 2	TA TB	TA TB
3T 3R	W-G G-W		28 3	E1 E2	E M
4T 4R	W-BR BR-W		29 4	M1 M2	SIG0A SIG0B
5T 5R	W-S S-W	Unit 1	30 5	RA RB	RA RB
6T 6R	R-BL BL-R		31 6	TA TB	TA TB
7T 7R	R-O O-R		32 7	E1 E2	E M
8T 8R	R-G G-R		33 8	M1 M2	SIG1A SIG1B
9T 9R	R-BR BR-R	Unit 2	34 9	RA RB	RA RB
10T 10R	R-S S-R		35 10	TA TB	TA TB
11T 11R	BK-BL BL-BK		36 11	E1 E2	E M
12T 12R	BK-O O-BK		37 12	M1 M2	SIG2A SIG2B

Table 63
E&M TIE trunk card (4-wire) (Continued)

Cables Card 1 through Card 10 from chassis				Column 1 Type 2	Column 2 Type 2
13T 13R	BK-G G-BK	Unit 3	38 13	RA RB	RA RB
14T 14R	BK-BR BR-BK		39 14	TA TB	TA TB
15T 15R	BK-S S-BK		40 15	E1 E2	E M
16T 16R	Y-BL BL-Y		41 16	M1 M2	SIG3A SIG3B
Note: The cable pair designated TA, TB is the transmit pair. The pair designated RA, RB is the receive pair.					

E&M TIE trunk card (2280Hz)

Table 64
E&M 2280 Hz TIE trunk connections

Lead designations	Pins	Pair color	Unit number
TA TB	26 1	W-BL BL-W	Unit 0
RA RB	27 2	W-O O-W	
TA TB	30 5	W-S S-W	Unit 1
RA RB	31 6	R-BL BL-R	
TA TB	34 9	R-BR BR-R	Unit 2
RA RB	35 10	R-S S-R	
TA TB	38 13	BK-G G-BK	Unit 3
RA RB	39 14	BK-BR BR-BK	

E&M TIE trunk card (RAN)

Table 65
E&M 2-wire Recorded Announcement trunk connections

Lead designations	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	Unit 0
SIG B SIG A	29 4	W-BR BR-W	
T1 R1	30 5	W-S S-W	Unit 1
SIG B SIG A	33 8	R-G G-R	
T2 R2	34 9	R-BR BR-R	Unit 2
SIG B SIG A	37 12	BK-O O-BK	
T3 R3	38 13	BK-G G-BK	Unit 3
SIG B SIG A	41 16	Y-BL BL-Y	

E&M TIE trunk card (MUS)

Table 66
E&M 2-wire Music trunk connections

Lead designations	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	Unit 0
T1 R1	30 5	W-S S-W	Unit 1
T2 R2	34 9	R-BR BR-R	Unit 2
T3 R3	38 13	BK-G G-BK	Unit 3

CO & DID trunk card

Table 67
Central Office & Direct Inward Dial trunk connections

Cable from chassis				Column 1	Column 2	Column 3
Pair	**Color**		**Pins**	**Lead designations**		
1T 1R	W-BL BL-W	Unit 0	26 1	T0 R0	T0 R0	A0 B0
2T 2R	W-O O-W		27 2		PPM0 —	C0 Spare
3T 3R	W-G G-W	Unit 1	28 3	T1 R1	T1 R1	A1 B1
4T 4R	W-BR BR-W		29 4		PPM1 —	C1 Spare
5T 5R	W-S S-W	Unit 2	30 5	T2 R2	T2 R2	A2 B2
6T 6R	R-BL BL-R		31 6		PPM2 —	C2 Spare
7T 7R	R-O O-R	Unit 3	32 7	T3 R3	T3 R3	A3 B3
8T 8R	R-G G-R		33 8		PPM3 —	C3 Spare
9T 9R	R-BR BR-R	Unit 4	34 9	T4 R4	T4 R4	A4 B4
10T 10R	R-S S-R		35 10		PPM4 —	C4 Spare
11T 11R	BK-BL BL-BK	Unit 5	36 11	T5 R5	T5 R5	A5 B5
12T 12R	BK-O O-BK		37 12		PPM5 —	C5 Spare
13T 13R	BK-G G-BK	Unit 6	38 13	T6 R6	T6 R6	A6 B6
14T 14R	BK-BR BR-BK		39 14		PPM6 —	C6 Spare
15T 15R	BK-S S-BK	Unit 7	40 15	T7 R7	T7 R7	A7 B7
16T 16R	Y-BL BL-Y		41 16		PPM7 —	C7 Spare

Central Office trunk card

Table 68
Central Office trunk connections

Cable from chassis				
Pair	**Color**		**Pins**	**Lead designations**
1T 1R	W-BL BL-W	Unit 0	26 1	T0 R0
2T 2R	W-O O-W		27 2	
3T 3R	W-G G-W		28 3	
4T 4R	W-BR BR-W		29 4	
5T 5R	W-S S-W	Unit 1	30 5	T1 R1
6T 6R	R-BL BL-R		31 6	
7T 7R	R-O O-R		32 7	
8T 8R	R-G G-R		33 8	
9T 9R	R-BR BR-R	Unit 2	34 9	T2 R2
10T 10R	R-S S-R		35 10	
11T 11R	BK-BL BL-BK		36 11	
12T 12R	BK-O O-BK		37 12	
13T 13R	BK-G G-BK	Unit 3	38 13	T3 R3
14T 14R	BK-BR BR-BK		39 14	
15T 15R	BK-S S-BK		40 15	
16T 16R	Y-BL BL-Y		41 16	

Trunk connections (UK)

NT5K17 Direct Inward Dial card terminations

Cross connect the NT5K17 DDI card as follows:

Table 69
NT5K17 DDI cross-connect terminations

Pair	Pins	Pair color	Unit number
T0	26	W-BL	
R0	1	BL-W	Unit 0
	27	W-O	
	2	O-W	
T1	28	W-G	
R1	3	G-W	Unit 1
	29	W-BR	
	4	BR-W	
T2	30	W-S	
R2	5	S-W	Unit 2
	31	R-BL	
	6	BL-R	
T3	32	R-O	
R3	7	O-R	Unit 3
	33	R-G	
	8	G-R	
T4	34	R-BR	
R4	9	BR-R	Unit 4
	35	R-S	
	10	S-R	
T5	36	BK-BL	
R5	11	BL-BK	Unit 5
	37	BK-O	
	12	O-BK	

Table 69
NT5K17 DDI cross-connect terminations (Continued)

Pair	Pins	Pair color	Unit number
T6 R6	38 13	BK-G G-BK	Unit 6
	39 14	BK-BR BR-BK	
T7 R7	40 15	BK-S S-BK	Unit 7
	41 16	Y-BL BL-Y	

NT5K18 Exchange line trunk card terminations

Cross connect the NT5K18 Exchange line trunk card as shown in Table 70.

Note: The connections on the NT5K18 Exchange line trunk card are polarity sensitive. Make sure the ground side of the trunk is connected to the A leg of the NT5K18 circuit. Make sure the -50 volt side of the trunk is connected to the B leg of the NT5K18 circuit.

Table 70
NT5K18 Exchange line trunk card cross-connect terminations

Pair	Pins	Pair color	Unit number
T0 R0	26 1	W-BL BL-W	Unit 0
	27 2	W-O O-W	
T1 R1	28 3	W-G G-W	Unit 1
	29 4	W-BR BR-W	
T2 R2	30 5	W-S S-W	Unit 2
	31 6	R-BL BL-R	

Table 70
NT5K18 Exchange line trunk card cross-connect terminations

Pair	Pins	Pair color	Unit number
T3 R3	32 7 33 8	R-O O-R R-G G-R	Unit 3
T4 R4	34 9 35 10	R-BR BR-R R-S S-R	Unit 4
T5 R5	36 11 37 12	BK-BL BL-BK BK-O O-BK	Unit 5
T6 R6	38 13 39 14	BK-G G-BK BK-BR BR-BK	Unit 6
T7 R7	40 15 41 16	BK-S S-BK Y-BL BL-Y	Unit 7

NT5K19 Analog TIE line trunk card terminations

Cross connect the NT5K19 analog TIE line trunk card as shown in Table 71.

Note: The speech pairs on the NT5K19 card are polarity insensitive. The E&M signalling pairs, however, are polarity sensitive. Make sure the ground side of the trunk is connected to the A leg of the NT5K19 circuit. Make sure the -50 volt side of the trunk is connected to the B leg.

Table 71
NT5K19 2W paging mode terminations

Pair	Pins	Pair color	Unit number
T0 R0 A PG	27 2 29 4	W-O O-W W-BR BR-W	Unit 0
T1 R1 A PG	31 6 33 8	R-BL BL-R R-G G-R	Unit 1
T2 R2 A PG	35 10 37 12	R-S S-R BK-O O-BK	Unit 2
T3 R3 A PG	39 14 41 16	BK-BR BR-BK Y-BL BL-Y	Unit 3

Table 72
NT5K19 2W Type 1 mode terminations

Pair	Pins	Pair color	Unit number
T0 R0 E M	27 2 28 3	W-O O-W W-G G-W	Unit 0
T1 R1 E M	31 6 32 &	R-BL BL-R R-O O-R	Unit 1
T2 R2 E M	35 10 36 11	R-S S-R BK-BL BL-BK	Unit 2
T3 R3 E M	39 14 40 15	BK-BR BR-BK BK-S S-BK	Unit 3

Table 73
NT5K19 4W Type 1 mode terminations

Pair	Pins	Pair color	Unit number
TA	26	W-BL	
TB	1	BL-W	
RA	27	W-O	
RB	2	O-W	Unit 0
E	28	W-G	
M	3	G-W	
RA	30	W-S	
RB	5	S-W	
TA	31	R-BL	
RB	6	BL-R	Unit 1
E	32	R-O	
M	7	O-R	
TA	34	R-BR	
TB	9	BR-R	
RA	35	R-S	
RB	10	S-R	Unit 2
E	36	BK-BL	
M	11	BL-BK	
TA	38	BK-G	
TB	13	G-BK	
RA	39	BK-BR	
TB	14	BR-BK	Unit 3
E	40	BK-S	
M	15	S-BK	

Table 74
NT5K19 AC15 mode pair terminations

Pair	Pins	Pair color	Unit number
TA	26	W-BL	
TB	1	BL-W	Unit 0
RA	27	W-O	
RB	2	O-W	
TA	30	W-S	
TB	5	S-W	Unit 1
RA	31	R-BL	
RB	6	BL-R	
TA	34	R-BR	
TB	9	BR-R	Unit 2
RA	35	R-S	
RB	10	S-R	
TA	38	BK-G	
TB	13	G-BK	Unit 3
RA	39	BK-BR	
TB	14	BR-BK	

Table 75
NT5K19 Recorded announcement mode pair terminations

Pair	Pins	Pair color	Unit number
T0	26	W-BL	
R0	1	BL-W	Unit 0
SIG B	29	W-BR	
SIG A	4	BR-W	
T1	30	W-S	
R1	5	S-W	Unit 1
SIG B	33	R-G	
SIG A	8	G-R	
T2	34	R-BR	
R2	9	BR-R	Unit 2
SIG B	37	BK-O	
SIG A	12	O-BK	
T3	38	BK-G	
R3	13	G-BK	Unit 3
SIG B	41	Y-BL	
SIG A	16	BL-Y	

Activating a default model trunk

Due to the automatic 30 second time-out on the administration menu, prepare the data that you want to input before you begin. To determine the corresponding TNs and trunks, check the location of trunk cards in the chassis or use LD 32.

INSTRUCTIONS FOR THE UK

Refer to the *Meridian 1 Guide for the UK (553-3001-110)* for a list of the default trunk models and trunk routes used in the UK.

Procedure 41
Activating a default model trunk

1 **Lift the handset of the administration telephone.**

2 **Enter the administration Flexible Feature Code to access the administration menu.**

The prompt "PASSWORD?" appears.

3 **Enter the default administration telephone password.**

You hear special dial tone and the prompt
"TASK?" appears in the top line of the character display.

The second line of the display reads"1 ADD TRUNK".

4 **Select "1 ADD TRUNK" by entering the number "1".**

The prompt "ROUTE ACCESS?" appears on the character display.

5 **Enter the access code of the route to which you want to add a trunk and press the pound key (#).**

The prompt
"TN?" asks you to enter a TN (Terminal Number) from one of the installed trunk cards.

If you do not enter a valid route number, "TN?" does not appear and the screen remains the same. If the type of trunk card does not match the route, the prompt "ROUTE ACCESS?" appears again, and you hear overflow tone.

6 **Enter the TN in Option 11 format (CCUU) and press the pound key.**

The prompt
"MODEL" appears. If you enter an invalid TN, the display shows "INVALID, TN?" and you must enter a new TN using the Option 11 format.

7 **Press the digits to select a trunk model (as assigned in LD 16).**

The character display shows
"OK".
After a delay of approximately four seconds, you hear special dial tone. The sequence repeats when the prompt
"TN?" appears on the character display.
The next valid trunk TN automatically increments after each trunk is activated.

8 **Terminate the sequence by hanging up the telephone receiver.**

OR

Repeat the sequence by going through the steps again.

When you enter "#" when the procedure repeats, you accept the next TN and are prompted for the model type.

When you enter "#" again, you accept the previously accepted model.

Note: The model selected during the first trunk activation sequence is the default model for all subsequent trunks. This is the case until you hang up the telephone or manually enter a new trunk model number.

End of Procedure

Activating a selected model trunk

Due to the automatic 30 second time-out on the administration menu, prepare the data that you want to input before you begin. To determine the corresponding TNs and trunks, check the location of trunk cards in the chassis or use LD 32.

Procedure 42
Activating a selected model trunk

1 **Lift the handset of the administration telephone.**

2 **Enter the administration Flexible Feature Code to access the administration menu.**

3 **Enter the default administration telephone password.**

You hear special dial tone and the prompt "TASK?" appears on the top line of the character display. The second line of the character display reads "1 ADD TRUNK".

4 **Select "1 ADD TRUNK" by entering the number "1".**

The prompt
"ROUTE ACCESS?" appears.

5 **Enter the access code of the configured trunk route to which you want to add the trunk and press the pound key (#).**

The prompt
"TN?" asks you to enter a TN from one of the installed trunk cards. If you do not enter a valid route number, "TN?" does not appear and the screen remains the same. If the card does not match the route, the prompt "ROUTE ACCESS?" appears again, and you hear overflow tone.

6 **Enter the TN in Option 11 format (CCUU).**

The response
"MODEL?"
prompts you to select a model number for the trunk.

7 **Enter a trunk model number for the specified TN, and route and press the pound key (#).**

The character display shows:

"OK"

After a delay of approximately four seconds, you hear special dial tone. The sequence is repeated when the following prompt appears on the character display.

"TN?"

8 **Hang up or repeat the sequence.**

The sequence ends when the last unit in the card is used and the program is complete, or when you hang up the telephone receiver.

Note: The model used for the first trunk activated in the sequence will be the default for all subsequent trunks. This is the case until you hang up or you manually enter a new trunk model number.

End of Procedure

Chapter 19 — Connecting an external alarm

This chapter describes the procedures for connecting an external alarm to the Option 11C Mini system. This chapter contains the following procedure:

- Procedure 43: "Installing an alarm using an alarm port" on page 279

The following are the two methods of connecting an external alarm to the Option 11C Mini system:

- through an alarm port assigned in software
- through contacts in a QUA6 Power Failure Transfer Unit (PFTU)

Alarm port assigned in software

You can equip the system with an alarm port. Connect an analog line to an analog (500/250 type) telephone or another similar type of ringing or alerting device.

Procedure 43
Installing an alarm using an alarm port

1 Install an analog (500/2500 type) line as described in "Chapter 17 — Connecting the telephones" on page 229.

2 Connect an analog (500/2500 type) telephone, or another similar alerting device used as an alarm, to the line.

You can assign the set as Model 20.

3 Use LD 15 and make the following changes.

Note: The following list only contains the prompts requiring a response. Use a Carriage Return, <CR>, to accept the default values for the other prompts.

a) Enter CHG in response to the REQ prompt.

b) Enter CDB in response to the TYPE prompt.

c) Enter the customer number (0-99) in response to the CUST prompt.

d) Enter the DN of the line assigned as an alarm port in response to the ALDN prompt.

Note: If the DN assigned to the alarm is accidentally called, the alarm activates. To avoid false alarms, make sure the DN is not consistent with the assigned numbering.

e) Press *return* in response to the remaining prompts.

End of Procedure

Alarm through a QUA6 PFTU

A QUA6 PFTU can be used to connect an external alarm through normally open or normally closed contacts of one of its units. The contacts operate under the same conditions as the PFTU, and can support the capacities listed in Table 76.

Table 76
AC capacities

	AC capacities
Maximum switching power	50.0 V A.
Maximum switching voltage	125.0 V rms
Maximum switching current	0.5 A

Figure 70 on page 281 shows an example of the contacts on one unit (PFT1) of the PFTU. Figure 70 shows the contacts in normal operating mode, not in failure mode. Table 77 on page 282 provides the connections for all units on the PFTU.

Figure 70
Contacts in PFTU

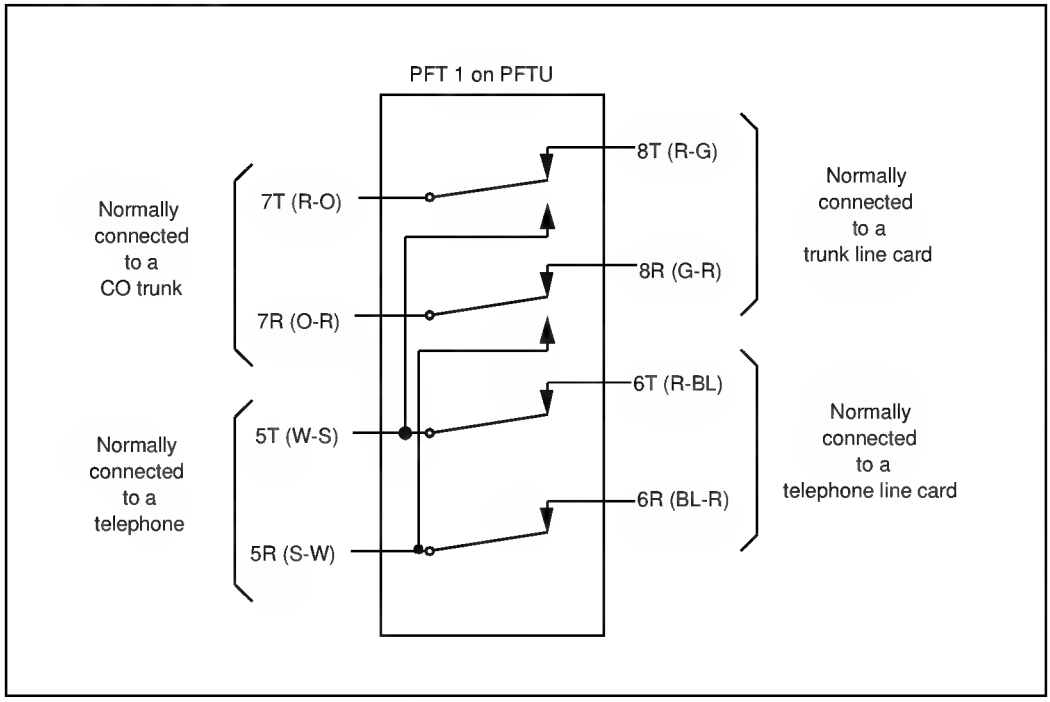


Table 77
Power Failure Transfer Unit connections

Unit	Pair	Color	Normal mode	Failure mode
PFT 1	5T 5R	W-S S-W	Makes with 6T and 6R	Opens 6T and 6R Makes with 7T and 7R
	6T 6R	R-BL BL-R	Makes with 5T and 5R	Open
	7T 7R	R-O O-R	Makes with 8T and 8R	Opens 8T and 8R Makes with 5T and 5R
	8T 8R	R-G G-R	Makes with 7T and 7R	Open
PFT 2	9T 9R	R-BR BR-R	Makes with 10T and 10R	Opens 10T and 10R Makes with 11T and 11R
	10T 10R	R-S S-R	Makes with 9T and 9R	Open
	11T 11R	BK-BL BL-BK	Makes with 12T and 12R	Opens 12T and 12R Makes with 9T and 9R
	12T 12R	BK-O O-BK	Makes with 11T and 11R	Open
PFT 3	13T 13R	BK-G G-BK	Makes with 14T and 14R	Opens 14T and 14R Makes with 15T and 15R
	14T 14R	BK-BR BR-BK	Makes with 13T and 13R	Open
	15T 15R	BK-S S-BK	Makes with 16T and 16R	Opens 16T and 16R Makes with 13T and 13R
	16T 16R	Y-BL BL-Y	Makes with 15T and 15R	Open
PFT 4	17T 17R	Y-O O-Y	Makes with 18T and 18R	Opens 18T and 18R Makes with 19T and 19R
	18T 18R	Y-G G-Y	Makes with 17T and 17R	Open
	19T 19R	Y-BR BR-Y	Makes with 20T and 20R	Opens 20T and 20R Makes with 17T and 17R
	20T 20R	Y-S S-Y	Makes with 19T and 19R	Open

P F T 5	21T 21R	V-BL BL-V	Makes with 22T and 22R	Opens 22T and 22R Makes with 23T and 23R
	22T 22R	V-O O-V	Makes with 21T and 21R	Open
	23T 23R	V-G G-V	Makes with 24T and 24R	Opens 24T and 24R Makes with 21T and 21R
	24T 24R	V-BR BR-V	Makes with 23T and 23R	Open

Appendix A – Preprogrammed data

When you first install an Option 11C Mini system, you must enter customer data into the overlay programs. You must, for example, assign features to telephone keys for the telephones to work correctly.

Nortel Networks or its distributors can program the Mini System Controller (MSC) card with customer data before they send the card to the customer site. If you load preprogrammed data into the system during the installation process, some overlay entries configure automatically on the telephones. For example, you can select a telephone model that has feature and key assignments already determined and a Class of Service already assigned. If you have to program several types of telephone models, an MSC card with preprogrammed data can save you time.

For software installation, the MSC card does not have to have data programmed in advance. The MSC card can be programmed with the minimum number of files to allow the Option 11C Mini to operate.

This chapter contains information about the following:

- Passwords and codes
- Default numbering plan
- Flexible Feature Codes
- SDI ports
- Trunk routes and models
- Model telephones

Passwords and codes

Table 78 lists each function in the left column with its password or code on the right.

Table 78
Passwords and codes

Function	Code or extension(s)
TTY password (For access to TTY Option 11C Mini overlays)	0000
Meridian Mail Mini administration password	adminpwd
Administration telephone password	1234
Administration telephone FFC	*41
SPRE code	1
Telephone relocation Flexible Feature Code	*40
Telephone Removal Flexible Feature Code	*42
Telephone relocation password (SCRD)	1234

Default numbering plan

The default numbering plan for Option 11C Mini is based on the following guidelines:

- The default numbering plan uses four digits and starts at 2200.
- The prime extension number (DN) for each telephone is in the range 2200-2XXX. The value of "XXX" varies depending on the number of telephones that you have in the system. Any secondary extension numbers use numbers outside this range. This arrangement allows the Option 11C Mini and Meridian Mail Mini to automatically configure telephones and their mailboxes.
- Meridian Mail Mini uses extension 7000 for access, 7001 for Auto Attendant, 7002 for Express Messaging, and 7003 for Prompt Maintenance.
- Meridian Mail Mini Virtual Agents are preconfigured for card slot 10 in Units 0, 1, 2, 4, 5, 8, 9, 10, 11, 12, and 13 of the Chassis Expander.
- The Central Answering Position has an extension of 7700. You can change this extension in LD 15.

First digits

Table 79 shows the default numbering plan for Option 11C Mini:

Table 79
Default numbering plan—First digit

First digit	Preprogrammed use for digit
1	SPRE code
2	Not used
3	Not used
4	Not used
5	Not used
6	Not used
7	COT/TIE/DID/WATS/FEX/RAN/MUS/AWR/Paging Trunk access codes, Meridian Mail Mini queues and attendant DN, Call park DNs
8	Not used
9	Not used
0	Attendant extension

Note: The first number of the default numbering plan is preprogrammed as 2200. The remaining numbers in the default numbering plan are assigned in software. These numbers do not become active, however, until you select the numbers during the telephone activation procedure.

The digit "7" in the default numbering plan is programmed with many system features to help you in configuring the Option 11C Mini system. If you have the Meridian Mail Mini software, it automatically configures user mailboxes to correspond with the 2200 numbering plan. The preprogrammed Meridian Mail Mini queues in the Meridian Mail Mini software match the default data on the Option 11C system.

Important extension numbers

Table 80
Default numbering plan—important extension numbers

Extension	Use
Attendant extension	0
First number in numbering plan	2200
Night number	7700*
Queue for Central Answering Position	7700 *
General ACD queue	7750 *
Meridian Mail Mini miscellaneous ACD queues: Meridian Mail Mini extension Auto attendant extension Express messaging Prompt maintenance Miscellaneous queues	7000-7009 7000 7001 7002 7003 7004-7009
Meridian Mail Mini position ID	7800-7811
Meridian Mail Mini agent extensions	7830-7841
Call park extensions	7900-7919

* The thresholds which control the agent AWC keys have been set as follows:

CWTH 1
CWLF 2
CWLW 4

Extensions assigned to card slots

Table 81
Extensions assigned to card slots in the Main Chassis and Chassis Expander

Slot number	Card number	Extension numbers
Main Chassis		
1	1	2200 through 2215
2	2	2216 through 2231
3	3	2232 through 2247
4	4	2248 through 2263
4	5	2264 through 2279
4	6	2280 through 2295
Chassis Expander		
7	7	2296 through 2311
8	8	2312 through 2327
9	9	2328 through 2343
10	10	2344 through 2359

Flexible Feature Codes

Many administrative procedures use Flexible Feature Code (FFC) data. Table 82 lists the FFCs for the Option 11C Mini system.

Table 82
Flexible Feature Codes

FFC Prompt	FFC	Definition
ASRC	*40	Automatic Set Relocation
AREM	*42	Automatic Set Removal Code
ADMN	*41	Administration Set Access Code
CFWA	#1	Call Forward All Calls Activate
CFWD	#1	Call Forward All Calls Deactivate
C6DS	*70	6 Party Conference Code
HOLD	#4	Permanent Call Hold
MNTC	*43	Maintenance Access Code
PUGR	*71	Pick-up Group Code
RDLN	*72	Last Number Redial
RDST	*73	Store Last Number Redial
RGAA	*74	Ring Again Activate
RGAD	*75	Ring Again Deactivate
RGAV	*77	Ring Again Verify
SPCC	#2/*80	Speed Call Controller Code
SPCU	#3/*81	Speed Call User Code
SSPU	*89	System Speed Call User Code

SDI ports

The minimum system port configuration for Option 11C Mini is 3 SDI ports, all of which are on the NTDK97 MSC card.

You can get additional ports by installing an NTAK02 SDI/DCH circuit card. The SDI/DCH card has 4 serial I/O ports with three possible configurations:

- 2 asynchronous ESDI ports with 2 DCHI ports
- 2 synchronous ESDI ports
- 2 SDI ports

Table 83 shows the default SDI port configuration. The value for "XX" is set on the faceplate of the MSC circuit card.

Table 83
Preconfigured SDI ports

TTY Number	Card	Port	Use	Configuration
0	0	0	MTC/SCH/BUG	XX/8/1/NONE
1	0	0	MTC/SCH/BUG	1200/8/1/NONE
2	0	1	MTC/SCH/BUG	1200/8/1/NONE
8	10	0	LSL	1200/8/1/NONE
9	10	1	CMS	4800

Modem port

The preconfigured modem port allows the remote maintenance modem to be connected without additional system programming. This port is preconfigured as TTY 0 (port 0 on the MSC card) and is programmed for Maintenance (MTC), Service Change (SCH), and BUG messages.

Enhanced Serial Data Interface (ESDI) port

Port 9 is preprogrammed as an ESDI port and supports Meridian Mail Mini. It functions as a Command Status Link with the following settings:

ESDI settings

Table 84
ESDI settings

Setting	Code
BPS	4800
CLOK	EXT
IADR	003
RADR	001
T1	10
T2	002
T3	040
N1	128
N2	08
K	7
RXMT	05
CRC	10
ORUR	005
ABOR	005
USER	CMS
ENL	NO

Telephone tones

The telephone tones in North America are as follows:

- **Dial tone:** A continuous tone
- **Special dial tone**: Three beeps followed by continuous dial tone.
- **Overflow tone:** Like a busy tone, except faster and higher.
- **Relocation tone:** A short high-pitched beep that continues for 4 seconds, followed by silence.

Trunk routes

Table 85 shows preprogrammed trunk route information that you must have on hand to activate and modify trunks.

Table 85
Preprogrammed trunk route information

Route	Type	Access Code	Mode	Interface
00 *	COT	7100	IAO	-
01 *	COT	7101	ICT	-
02 *	COT	7102	OGT	-
03	TIE	7103	IAO	-
04	TIE	7104	ICT	-
05	TIE	7105	OGT	-
06	DID	7106	ICT	-
07	WAT	7107	IAO	-
08	WAT	7108	ICT	-
09	WAT	7109	OGT	-
40	MUS	7140	OGT	-
41	AWR	7141	-	AUD
42	RAN	7142	-	DGT
43	RAN	7143	-	AUD
44	PAG	7144	OGT	-
50	FEX	7150	IAO	-
51	FEX	7151	ICT	-
52	FEX	7152	OGT	-

Note: Trunk routes marked with an asterisk (*) are configured to support Call Detail Recording (CDR) output. CDR is preconfigured as follows:

CDR YES

INC YES

OAL YES

AIA YES

Trunk models

Note: All trunks are programmed as immediate start/supervision = Yes, with the exception of trunks with an asterisk (*) next to them. Trunks marked with an asterisk (*) are set for wink start/supervision = Yes.

Table 86
Trunk model information

Mode	Pack	Model	Signaling	DIP or DTN	BIMP and TIMP
COT	XUT	1	GRD	DIP	3COM/600
		2	LOP	DIP	3COM/600
		3	GRD	DTN	3COM/600
		4	LOP	DTN	3COM/600
		5	GRD	DIP	3COM/900
		6	LOP	DIP	3COM/900
		7	GRD	DTN	3COM/900
		8	LOP	DTN	3COM/900
TIE	XUT	1	OAD	DIP	3COM/600
		2	LDR	DIP	3COM/600
		3	OAD	DTN	3COM/600
		4	LDR	DTN	3COM/600
		5	OAD	DIP	3COM/900
		6	LDR	DIP	3COM/900
		7	OAD	DTN	3COM/900
		8	LDR	DIP	3COM/900
	XEM	16	EAM	DIP	- /600
		17	EM4	DIP	-
		18	EAM	DTN	- / 600

Table 86
Trunk model information (Continued)

Mode	Pack	Model	Signaling	DIP or DTN	BIMP and TIMP
		19	EM4	DIP	-
DID	XUT	1	LDR (Wink Start Supv = Yes	DIP	3COM/600
		2	LDR (Wink Start Supv = Yes	DTN	3COM/600
		3	LDR (Wink Start Supv = Yes	DIP	3COM/900
		4	LDR (Wink Start Supv = Yes	DTN	3COM/900
		5*	LDR (Wink Start Supv = Yes	DIP	3COM/600
		6*	LDR (Wink Start Supv = Yes	DTN	3COM/600
		7*	LDR (Wink Start Supv = Yes	DIP	3COM/900
		8*	LDR (Wink Start Supv = Yes	DTN	3COM/900
WAT	XUT	1	GRD	DIP	3COM/600
		2	LOP	DIP	3COM/600
		3	GRD	DTN	3COM/600
		4	LOP	DTN	3COM/600
		5	GRD	DIP	3COM/900
		6	LOP	DIP	3COM/900

Table 86
Trunk model information (Continued)

Mode	Pack	Model	Signaling	DIP or DTN	BIMP and TIMP
		7	GRD	DTN	3COM/900
		8	LOP	DTN	3COM/900
MUS	XUT	1			3COM/600
AWR	XUT	1			600/1200
RAN	XUT	1			600/1200
PAG	XUT	1	LDR	DIP	3COM/600
		2	OAD	DIP	3COM/600
		3	LDR	DTN	3COM/600
		4	OAD	DTN	3COM/600
		5	LDR	DIP	3COM/900
		6	OAD	DIP	3COM/900
		7	LDR	DTN	3COM/900
		8	OAD	DTN	3COM/900
	XEM	16	EAM	DIP	-/600
		17	EM4	DIP	-
		18	EAM	DTN	- /600
		19	EM4	DTN	-
FEX	XUT	1	GRD	DIP	3COM/600
		2	LOP	DIP	3COM/600
		3	GRD	DTN	3COM/600
		4	LOP	DTN	3COM/600
		5	GRD	DIP	3COM/900
		6	LOP	DIP	3COM/900

Table 86
Trunk model information (Continued)

Mode	Pack	Model	Signaling	DIP or DTN	BIMP and TIMP
		7	GRD	DTN	3COM/900
		8	LOP	DTN	3COM/900

* These trunks are set for Wink start.

Model telephones

This section provides a series of tables that list the different model telephones, their intended use, assigned Class of Service options, and key number positions with assigned features.

Refer to the following tables:

- Table 90, "M2008 telephone model 99," on page 300
- Table 91, "M2616 model 99 telephone," on page 301
- Table , "M2616 and M2216 CAP telephone model 60," on page 302
- Table 93, "Analog (500/2500-type) telephone models," on page 303
- Table 94, "M2006 General business telephone models," on page 304
- Table 95, "M2008 General business telephone models," on page 305
- Table 96, "M2008 Two-line general business telephone models," on page 306
- Table 97, "M2008 Manager telephone models," on page 308
- Table 98, "M2008 Message center telephone models," on page 309
- Table 99, "M2216 ACD telephone models," on page 310
- Table 100, "M2616 Secretary telephone models," on page 311
- Table 101, "M2616 ACD telephone models," on page 312
- Table 102, "M2616 Manager telephone models," on page 313
- Table 103, "M2616 Message center telephone models," on page 314

Note: Off-premises Station (OPS) telephones do not have their own telephone models. You can, however, create OPS models by entering DD in response to the CDEN prompt in LD 10.

Tables 87 through 89 show the acronyms for the Class of Service options for each telephone model in this section.

Table 87
Class of Service options - analog (500/2500-type) telephones

Prompt	Meaning
TLD	Toll Denied
HTA	Hunting Allowed
LNA	Last Number Redial Allowed
FNA	Call Forward No Answer Allowed
PUA	Pickup Allowed
XRA	Ring Again Allowed
MWA	Message Waiting Allowed

Table 88
Class of Service options - Meridian 1 digital telephones

Prompt	Meaning
TLD	Toll Denied
AAD	Automatic Answerback Denied
ADD	Automatic Digit Display
HTA	Hunting Allowed
LNA	Last Number Redial Allowed
FNA	Call Forward No Answer Allowed
PUA	Pickup Allowed
XRA	Ring Again Allowed
MWA	Message Waiting Allowed

Table 89
Class of Service options - ACD telephones

Prompt	Meaning
UNR	Unrestricted
AAD	Automatic Answerback Denied
ADD	Automatic Digit Display
HTA	Hunting Allowed
LNA	Last Number Redial Allowed
FND	Call Forward No Answer Allowed
PUD	Pickup Denied
MWA	Message Waiting Allowed

Administration telephone models

M2008 model 99

Intended use: Administration (maintenance) telephone

Assigned Class of Service options:
MTA/ADD/LNA/FNA/GPUA/MWA/FBD

Table 90
M2008 telephone model 99

Key number position	Feature
7	Blank
6	Message
5	Transfer
4	Speed Call (personnel: 99)
3	Forward
2	Conference
1	DN
0	DN

M2616 model 99

Intended use: Administration (maintenance) telephone

Assigned Class of Service options:
MTA/LNA/FNA/GPUA/MWA/ADD//HFA/FBD

Table 91
M2616 model 99 telephone

Feature	Key number position	Key number position	Feature
-	15	7	-
Autodial	14	6	Message
Autodial	13	5	Transfer
Autodial	12	4	Ring Again
Autodial	11	3	Forward
Autodial	10	2	Conference
Autodial	9	1	DN
Speed Call (personnel: 99)	8	0	DN

Central Answering Position (CAP) telephone models

M2616 and M2216 CAP telephone model 60

Intended use: Central Answering Position telephone

Assigned Class of Service options:
LNA/FND/GPUA/MWA/ADD/HFD/AGN/FBD/SPV

Table 92
M2616 and M2216 telephone model 60

Feature	Key number position	Key number position	Feature
Hot *	15	7	-
Make Set Busy	14	6	DN
Display Waiting Calls	13	5	Park
Autodial	12	4	Override
Autodial	11	3	Add
Autodial	10	2	Consult/Join
Autodial	9	1	Extend
Autodial	8	0	ACD Queue (7700)

* This key is used as a Hotline to connect to the office paging system. Assign it with the paging route access code and define it when you activate the telephone.

Note: With the M2616 CAP, you must use an ACD character display. In the system software, the Extend key is called a Transfer key. The Consult/Join key is called a Conference key. The Add key is called a No Hold Conference key.

Analog (500/2500-type) telephone models

Note: When you are activating an analog (500-type) telephone, you must use an analog (2500-type) telephone to define the features. When you have done this, disconnect the analog (2500-type) telephone and replace it with the analog (500-type) telephone that you are activating.

Analog (500/2500-type) support personnel telephone models

Table 93
Analog (500/2500-type) telephone models

Model	Type of telephone	Assigned Class of Service options
20	Support personnel telephone with toll denied	TLD, C6A, CFXD, DTN, FND, GPUA, LNA, XFA, XRA, FBD
21	Support personnel telephone	UNR, C6A, CFXD, DTN, FND, GPUA, LNA, XFA, XRA, FBD
22	Support personnel telephone with message indication lamp	MWA, TLD, C6A, CFXD, DTN, FNA, GPUA, LNA, XFA, XRA, FBD, LPA
23	Support personnel telephone with message indication lamp	MWA, UNR, C6A, CFXD, DTN, FNA, GPUA, LNA, XFA, XRA, FBD, LPA
24	Support personnel telephone with message indication and no lamp	MWA, TLD, C6A, CFXD, DTN, FNA, GPUA, LNA, XFA, XRA, FBD, LPD
25	Support personnel telephone with message indication and no lamp	MWA, UNR, C6A, CFXD, DTN, FNA, GPUA, LNA, XFA, XRA, FBD, LPD
26	Courtesy telephone	MNL, TLD

M2006 General business telephone models

Table 94
M2006 General business telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature
20	General business telephone	FND, GPUA, LNA, MWA, FBD, UNR	5 - Transfer 4 - Ring Again 3 - Pick-up 2 - Forward 1- Conference 0 - DN
21	General business telephone with message indicator	FNA, GPUA, LNA, MWA, FBD, UNR	5 - Message 4 - Transfer 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
22	General business telephone with message indication and speed call	FNA, GPUA, LNA, MWA, FBD, UNR	5 - Message 4 - Speed Call 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
23	General business telephone	FND, GPUA, LNA, MWA, FBD, TLD	5 - Transfer 4 - Ring Again 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
24	General business telephone with message indicator	FNA, GPUA, LNA, MWA, FBD, TLD	5 - Message 4 - Transfer 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
25	General business telephone with message indication and speed call	FNA, GPUA, LNA, MWA, FBD, TLD	5 - Message 4 - Speed Call 3 - Pick-up 2 - Forward 1 - Conference 0 - DN

M2008 General business telephone models

Table 95
M2008 General business telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature
20	General business telephone	FND, GPUA, LNA, MWA, NDD, FBD	7 - Autodial 6 - Autodial 5 - Transfer 4 - Ring Again 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
21	General business telephone with message indication	FNA, GPUA, LNA, MWA, NDD, FBD	7 - Autodial 6 - Message 5 - Transfer 4 - Ring Again 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
22	General business telephone with display	FND, GPUA, LNA, MWA, ADD, FBD	7 - 6 - Autodial 5 - Transfer 4 - Ring Again 3 - Pick-up 2 - Forward 1 - Conference 0 - DN
23	General business telephone with message indication and display	FNA, GPUA, LNA, MWA, ADD, FBD	7 - 6 - Message 5 - Transfer 4 - Ring Again 3 - Pick-up 2 - Forward 1 - Conference 0 - DN

M2008 Two-line general business telephone models

Table 96
M2008 Two-line general business telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature
24	Two-line general business telephone	FND, GPUA, LNA, MWA, NDD, FBD	7 - Autodial 6 - Transfer 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
25	Two-line general business telephone with message indication	FNA, GPUA, LNA, MWA, NDD, FBD	7 - Autodial 6 - Message 5 - Transfer 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
26	Two-line general business telephone with display	FND, GPUA, LNA, MWA, ADD, FBD	7 - 6 - Transfer 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
27	Two-line general business telephone with message indication and display	FNA, GPUA, LNA, MWA, ADD, FBD	7 - 6 - Message 5 - Transfer 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN

Table 96
M2008 Two-line general business telephone models (Continued)

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature
28	Two-line general business telephone	FND, GPUA, LNA, MWA, NDD, FBD	7 - Autodial 6 - Autodial 5 - Autodial 4 - Autodial 3 - Forward 2 - Conference 1 - DN 0 - DN

M2008 manager telephone models

Table 97
M2008 Manager telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature
30	Manager telephone	FND, GPUA, LNA, MWA, NDD, FBD	7 - Transfer 6 - Voice Call 5 - Speed Call (personnel: 20) 4 - Ring Again 3 - Forward 2 - Conference 1 - DN 0 - DN
31	Manager telephone with message indication	FNA, GPUA, LNA, MWA, NDD, FBD	7 - Voice Call 6 - Message 5 - Speed Call (personnel: 20) 4 - Ring Again 3 - Forward 2 - Conference 1 - DN 0 - DN
32	Manager telephone with display	FND, GPUA, LNA, MWA, ADD, FBD	7 - 6 - Voice Call 5 - Speed Call (personnel: 20) 4 - Ring Again 3 - Forward 2 - Conference 1 - DN 0 - DN
33	Manager telephone with message indication and display	FNA, GPUA, LNA, MWA, ADD, FBD	7 - 6 - Message 5 - Voice Call 4 - Speed Call (personnel: 20) 3 - Forward 2 - Conference 1 - DN 0 - DN

M2008 Message center telephone models

Table 98
M2008 Message center telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature
60	Message center telephone	FND, GPUA, LNA, MWA, NDD, FBD	7- Message Cancellation 6 - Message Indication 5 - Speed Call (personnel: 20) 4 - Ring Again 3 - Forward 2 - Conference 1 - DN 0 - DN
61	Message center telephone with display	FND, GPUA, LNA, MWA, ADD, FBD	7- 6 - Message Cancellation 5 - Message Indication 4 - Speed Call (personnel: 20) 3 - Forward 2 - Conference 1 - DN 0 - DN

M2216 ACD telephone models

Table 99
M2216 ACD telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature	
20	ACD agent with display	LNA, FND, GPUA, MWA, ADD, FBD	15 - Autodial 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - ACD calls waiting 8 - DN	7 - 6 - Transfer 5 - Speed Call 4 - Forward 3 - Conference 2 - Make Set Busy 1 - Not ready 0 - ACD DN (7750)
30	ACD supervisor with display	LNA, FND, GPUA, MWA, ADD, FBD	15 - Autodial 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Display Agents 9 - Display Queue 8 - DN	7 - 6 - Transfer 5 - Speed Call 4 - Forward 3 - Conference 2 - Make Set Busy 1 - Not Ready 0 - ACD DN (7750)

M2616 Secretary telephone models

Table 100
M2616 Secretary telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature	
20	Secretary telephone with display	LNA, FND, GPUA, MWA, ADD, HFA, FBD	15 - Autodial 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Autodial 8 - Autodial	7 - 6 - Speed Call (personnel: 20) 5 - Transfer 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
21	Secretary telephone with display and message indication	LNA, FNA, GPUA, MWA, ADD, HFD, FBD	15 - Autodial 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Autodial 8 - Transfer	7 - 6 - Message 5 - Ring Again 4 - Speed Call (personnel: 20) 3 - Forward 2 - Conference 1 - DN 0 - DN

M2616 Advanced business telephone

Table 101
M2616 ACD telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature	
22	Advanced business telephone	LNA, FND, GPUA, MWA, NDD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Autodial 8 - Autodial	7 - Transfer 6 - Speed Call 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
23	Advanced business telephone with message indication	LNA, FNA, GPUA, MWA, NDD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Autodial 8 - Transfer	7 - Speed Call 6 - Message 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
24	Advanced business telephone with display	LNA, FND, GPUA, MWA, ADD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Autodial 8 - Transfer	7 - 6 - Speed Call 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
25	Advanced business telephone with message indication and display	LNA, FNA, GPUA, MWA, ADD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Transfer 8 - Speed Call	7 - 6 - Message 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN

M2616 Manager telephone models

Table 102
M2616 Manager telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature	
30	Manager telephone	LNA, FND, GPUA, MWA, NDD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Autodial 8 - Voice Call	7 - Transfer 6 - Speed Call (personnel: 20) 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
31	Manager telephone with message indication	LNA, FNA, GPUA, MWA, NDD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Voice Call 8 - Transfer	7 - Speed Call (personnel: 20) 6 - Message 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
32	Manager telephone with display	LNA, FND, GPUA, MWA, ADD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Voice Call 8 - Transfer	7 - 6 - Speed Call (personnel: 20) 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
33	Manager telephone with message indication and display	LNA, FNA, GPUA, MWA, ADD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Voice Call 9 - Transfer 8 - Speed Call (personnel: 20)	7 - 6 - Message 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN

M2616 Message center telephone models

Table 103
M2616 Message center telephone models

Model	Intended use	Assigned Class of Service options	Key number position with assigned feature	
61	Message center telephone	LNA, FND, GPUA, MWA, NDD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Autodial 9 - Message Cancellation 8 - Message Indication	7 - Transfer 6 - Speed Call (personnel: 20) 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN
62	Message center telephone with display	LNA, FND, GPUA, MWA, ADD, HFA, FBD	15 - 14 - Autodial 13 - Autodial 12 - Autodial 11 - Autodial 10 - Message Cancellation 9 - Message Indication 8 - Transfer	7 - 6 - Speed Call (personnel: 20) 5 - Ring Again 4 - Pick-up 3 - Forward 2 - Conference 1 - DN 0 - DN

Appendix B – Changing preprogrammed data

General information

The preprogrammed data on the Option 11C Mini system can provide a starting point for programming the system's telephone and trunking information.

This chapter shows how to change the Option 11C Mini default numbering plan. You can change the numbering plan for one or more of the following reasons:

- to change the first number in the numbering plan
- to shift the start of the numbering plan to another card slot
- the default numbering plan conflicts with the system data

This section describes how to make changes to the default numbering plan. This section also provides information about modifying model telephone and trunk programming stored in the Option 11C Mini preprogrammed data.

Changing the default numbering plan

Extensions assigned are different from the default numbering plan

Compare the first digits assigned to this system with the default numbering plan.

- If the first digit is in the range that is not in use, change the first number in the default numbering plan. To make this change, follow the instructions in "Changing the first number in the numbering plan" on page 316.
- If Meridian Mail Mini, trunk routes, or other data are using the first digit, you must remove the conflicting data. Follow the instructions found in "Removing numbering plan conflicts" on page 320.

Changing the first number in the numbering plan

To change the first number in the numbering plan perform the following procedure:

Procedure 44
Changing the first number in the numbering plan

1 **Lift the handset of the administration telephone.**

2 **Enter the administration Flexible Feature Code.**

3 **Enter the administration telephone password.**

4 You hear special dial tone and the prompt "TASK?" appears on the top line of the character display.

5 **Press the asterisk (*) three times.**

The second line of the character display reads "4 INSTALLATION OPTIONS'".

6 **Select "4 INSTALLATION OPTIONS" by entering the number "4".**

The character display reads:

1 DEFAULT SETS

2 NUMBERING PLAN

7 **Select "2 NUMBERING PLAN" by entering the number "2".**

The character display reads:

FIRST NUMBER (XXXX)?

8 **To create a new first number, enter the digits you want and press the pound key.**

The first number you enter in the numbering plan is assigned to slot 1, unit zero of the Main Chassis. The default numbers assigned to the remaining card and unit combinations are in sequence, assuming each slot has up to 16 units.

End of Procedure

Determining new extension numbers

Perform the following procedure to change the default numbering plan, and to determine the extension number to assign to a specific telephone:

Procedure 45
Determine the extension number

1 Identify the line card to which the telephone is connected. Take the card slot number associated with the card and subtract 1.

2 Multiply this number by 16.

3 Add the first extension number in the new numbering plan.

4 Identify the unit number the telephone terminates on, and add it to the result from step 3.

End of Procedure

Example:

In this example, the new numbering plan starts at extension number 4500. You want to know the extension number of the telephone connected to card 8, unit 12:

1 Subtract 1 from the card slot number (8-1): = 7

2 Multiply by 16: x 16
=112

3 Add the first extension number:+4500

4 Add the unit number:+ 12
Number assigned to card 8, unit 12 4624

Note: If you are using a three digit numbering plan, follow the same procedure.

Example:

The new three digit numbering plan starts at extension number 300. You want to know the extension number of the telephone connected to card 8 unit 12:

1 Subtract 1 from the card slot number (8-1): = 7

2 Multiply by 16: x 16
=112

3 Add the first extension number: + 300

4 Add the unit number: + 12
Number assigned to card 8, unit 12 424

For the system to have a consecutive numbering plan, make sure that the line cards are in consecutive card slots in the Option 11C Mini chassis.

If you arrange the line cards consecutively, the preassigned telephone extensions automatically configure during telephone activation. You do not have to manually enter the extensions.

Using the Meridian Mail Mini Auto-configure feature

The Meridian Mail Mini Auto-configure feature automatically matches Meridian Mail Mini mailboxes with telephone extensions. If you have the Meridian Mail Mini card option and you want to use the Meridian Mail Mini Auto-configure feature, make sure

- The numbering plan is consecutive.
- The first number in the Option 11 system and the Meridian Mail Mini system are the same.

Shifting the numbering plan to a new card slot

The first number in the numbering plan is assigned to slot 1, unit 0. You can shift the first number in the numbering plan to a different card slot.

The following procedure describes how to shift the first number in the numbering plan to a specific card slot.

Procedure 46
Shift the first number in the numbering plan to a different card slot

1 Locate the first line card. Subtract 1 from the number of the card slot that it is in.

2 Multiply this number by 16.

3 Take the first number in the numbering plan and subtract the result from step 2.

Note: When you enter the value from step 3 in response to the prompt "FIRST NUMBER (XXXX)?" on the administration telephone menu, the number shifts to the appropriate slot.

End of Procedure

Example:

The first number in the numbering plan is 2200. For the first number in the numbering plan to be 2300, and the first line card is in slot 6, perform the following calculation:

1 Locate the first line card. Subtract 1 from the number of the card slot that it is in.

6 - 1 = 5

2 Multiply the number from step 1 by 16:

5 X 16 = 80

3 Subtract this number from the first number in the numbering plan:

2300 - 80 = 2220

4 Enter this value in response to the "FIRST NUMBER (2200)?" prompt on the administration telephone:

FIRST NUMBER (2000)? 2220

Removing numbering plan conflicts

This section contains methods for removing any numbering plan conflicts that occur.

Conflicts with Meridian Mail Mini data

Manufacturers and distributors ship the Option 11C Mini system with data already programmed to support Meridian Mail Mini. The Meridian Mail Mini preprogrammed data can cause problems in the following situations:

- there is a numbering plan conflict with preprogrammed Meridian Mail Mini data and the programming required for another feature
- another circuit card requires card slot 10

Obtaining the use of card slot 10

If another circuit card requires card slot 10, remove the six Meridian Mail Mini agents programmed for this card slot. Load LD 11 on the TTY and respond to the system prompts, as shown below. Repeat the procedure for each of the six units that you want to remove.

LD 11

REQ OUT <CR>

TYPE 2008 <CR>

TN 10 XX <CR> "XX" = a value of 0,1,2,8,9, or 10

Obtaining the use of Meridian Mail Mini ACD queues

The Meridian Mail Mini feature also uses a number of ACD queues in the Option 11 system. See "Conflicts with ACD queues" on page 321 for information about how to remove this data from the system.

Conflicts with ACD queues

The Option 11C Mini has preprogrammed ACD queues for Meridian Mail Mini, the Central Answering Position, and general purpose ACD. To remove these values, use LD 23.

> ***Note:*** Before you remove this data from the system, make sure that all ACD agent information is removed from the queue.

In LD 23, respond to the prompts as follows:

LD 23

REQ OUT

TYPE ACD

CUST 0

ACDN XXXX "XXXX" = Value of ACD queue

Repeat for each ACD queue you want to remove.

Conflicts with Call Park extension numbers

Extension numbers for system call park are preprogrammed for the Central Answering Position. To remove this data from the system, load LD 50 and respond to the prompts as follows:

LD 50

REQ OUT

TYPE CPK

CUST 0

SPDN XXXX "XXXX" = Value of Call Park extension

Repeat for each Call Park extension you want to remove.

Conflicts with SDI ports

Five SDI/ESDI ports are preprogrammed on the Option 11C Mini system. Ports 8 and 9 are associated with the Meridian Mail Mini. Ports 0, 1 and 2 are associated with the NTDK97 MSC card. You cannot remove port 0; however, you can remove any of the remaining ports using LD 17 as follows:

LD 17

REQ CHG

TYPE CFN

ADAN OUT TTY X "X" = the TTY that you are removing.

Conflicts with the SPRE code

If the preprogrammed SPRE code conflicts with the programming required for the Option 11 system, use LD 15 to remove it. For customer 0 enter the following in response to the SPRE prompt:

LD 15

SPRE Xy "y" = the value of the SPRE code

Note: To define a new SPRE code, type a space and enter the new number.

Conflicts with the attendant extension number

You cannot remove the attendant extension number completely from the Option 11C Mini system data, but you can replace it with another number.

LD 15

REQ CHG CHG = Change

TYPE CDB CDB = Customer Data Block

CUST x "x" = Customer number

.

ATDN xxxx "xxxx" = the new extension number

Changing or removing the preprogrammed night number

To change or remove the night number, use LD 15.

LD 15

REQ CHG CHG = Change

TYPE CDB CDB = Customer Data Block

CUST x "x" = Customer number

NIT1 bbbb, or X aaaa "bbbb" = the new extension number (DN)
Or
"aaaa" = the current night number
(the night number is now removed).

Conflicts with Flexible Feature Codes

If the preprogrammed Flexible Feature Codes (FFC) conflict with the programming required for the Option 11C Mini system, remove the data from the system using LD 57.

LD 57

To change one or more access codes, enter the following commands:

REQ	CHG, END	Change or end
TYPE	FFC	FFC = Flexible feature codes
CUST	0-31	Customer Number
FFCT	YES,(NO)	FFC Confirmation tone
CODE	aaaa	Enter access code prompt (aaaa)
AAAA	xx	Enter the new access code prompt (AAAA)
CODE	<CR>	Return to REQ
REQ	END	End program

To remove one access code, enter the following commands:

REQ	OUT	Action request
TYPE	FFC	FFC = Flexible feature codes
CUST	0-31	Customer Number
FFCT	YES,(NO)	FFC Confirmation tone
ALL	NO	Remove specific access code
CODE	aaaa	Enter access code prompt (aaaa)
AAAA	xx	Enter the new access code prompt (AAAA)
CODE	<CR>	Return to REQ
REQ	END	End program

To remove all access codes, enter the following commands:

REQ OUT	Action request
TYPE FFC	FFC = Flexible feature codes
CUST 0-31	Customer Number
FFCT YES,(NO)	FFC Confirmation tone
ALL YES	Remove all access codes
CODE<CR>	Return to REQ
REQ END	End program

Creating, changing, and removing model telephones

If you need a model telephone different from the default models provided in Option 11C Mini software, use overlays to design the models. Use the information in Table 104.

Table 104
Design model telephones

Task	Overlay
Create model telephones:	
Analog telephones (500/2500 type telephones)	LD 10
Digital telephones	LD 11
Get information about model telephones	LD 20 (printout)

If you require additional help when creating model telephones and trunks, refer to the *Option 11C Software guides*.

Creating analog telephone models

You must enter the following information in LD 10 to create an analog (500/2500- type) telephone model:

LD 10

REQ NEW

TYPE 500 M

MODL YYY "YYY" = the model number of the telephone that you are creating

Enter responses to the remaining prompts to complete the new model. (Refer to the Option 11 *Software guides* for a complete list of prompts and possible responses).

Modifying analog model telephones

If you want to modify an analog telephone, use LD 10 and enter the following commands on the TTY:

LD 10

REQ CHG

TYPE 500 M

MODL YYY "YYY" = the model number of the telephone that you are modifying

For more information about LD 10, refer to the *X11 Administration Input/Output Guide*.

Creating digital model telephones

To create model digital telephones, you must program key 0 with a function that can act as a prime extension number or its equivalent. This includes telephones that are programmed to have Single Call Ringing (SCR), Multiple Call Ringing (MCR), Single Call Non-Ringing (SCN), Multiple Call Non-Ringing (MCN), and Automatic Call Distribution (ACD).

For ACD telephones, the model telephone defines the ACD queue. To define the extension number, you must enter the ID number of the agent or the Central Answering Position.

You must enter the following information in LD 11 to create a digital telephone model:

LD 11

REQ NEW

TYPE 2XXX M or 3000 M "XXX" = allowed telephone types

MODL YYY "YYY" = the model number of the telephone that you are creating (between 1 - 127)

Enter the responses to the remaining prompts to complete the new model. Refer to the *Option 11C Software guides* for a complete list of prompts and possible responses.

Modifying digital model telephones

If you want to modify a digital telephone, load LD 11 and enter the following commands on the TTY:

LD 11

REQ CHG

TYPE 2XXX M or 3000 M "XXX" = allowed telephone types

MODL YYY "YYY" = the model number of the telephone that you are modifying

For more information about LD 11, refer to the *X11 Administration Input/Output Guide*.

Printing model information

To print information about model telephones, use LD 20.

Analog telephones

LD 20

REQ PRT

TYPE 500 M

MODL YYY "YYY" = the telephone model number.
If you want to print all of the models for this telephone type, leave this value blank.

Digital telephones

Note: To print M3000 telephone models, you must enter "TYPE 3000 M". If you enter "TYPE 2XXX M", you print all the Meridian Digital Telephone models except the M3000.

LD 20

REQ PRT

TYPE 2XXX M or 3000 M "XXX" = the telephone type

MODL YYY "YYY" = the telephone model number (between 1 - 127). If you want to print all of the models for this telephone type, leave this value blank.

Removing model telephones

Use LD 10 to remove analog telephone models and LD 11 to remove digital telephone models. Respond as follows to the prompts in either overlay:

LD 10 or LD 11

REQ OUT

TYPE XXXX M "XXXX" = telephone type for the model you are removing (Example: 500, 2006, 2317, 2216, 3000.)

CUST 0

MODL YYY "YYY" = the model number associated with the telephone type you are removing (Valid range is 1-127).

Creating model trunks and changing route access codes

If you need a trunk that is different from the default models provided in Option 11C Mini software, use Overlay 14 to design a model. Change route access codes using the administration telephone.

If you require additional help when creating model telephones and trunks, refer to the *X11 Administration Input/Output Guide*.

Creating model trunks

To create a new model trunk, load LD 14 and enter the following commands on the TTY:

LD 14

REQ NEW

TYPE aaa M "aaa" = the type of trunk that you are creating (TIE, COT, WATS, and so on).

MODL YYY "YYY" = the model number of the trunk that you are creating (between 1 - 127)

XTRK XUT, XEM, XCOT, This prompt only appears when you XDID define the first model in a group. Each group contains 16 consecutive model definitions. (Refer to the group limits listed below.) When the first model in a group is defined, the remaining model numbers in the group(s) are taken to be of the same type.

Group limits are as follows:

1-15, 16-31, 32-47, 48-63, 64-79. 80-95, 96-111, 112-127.

Examples:

If, for example, you define a model trunk as XUT, with a model number of 12, all models in the group 1-15 will automatically be XUT models. If you define another model trunk as an XEM, with a model number of 33, all models in the group 32-47 will automatically be XEM models.

> ***Note:*** When you create trunk models, you are not prompted for the trunk route or member number. This information is defined using the administration telephone to program the XUT or XEM circuit card.

For more information about LD 14, refer to the *X11 Administration Input/Output Guide*.

Modifying model trunks

If you want to modify a trunk, load LD 14 and enter the following commands on the TTY:

LD 14

REQ CHG

TYPE aaa M "aaa" = the type of trunk that you are modifying

MODL YYY "YYY" = the model number of the trunk that you are modifying (between 1 - 127)

Removing model trunks

To remove a trunk model from the system, load LD 14 and respond to the prompts as follows:

LD 14

REQ OUT

TYPE XXX M "XXX" = the trunk type of the model that you are removing (Examples: COT, TIE, DID, FEX, WAT, etc.)

CUST 0

MODL YYY "YYY" = the model number associated with the trunk type you are removing (Valid range is 1-127).

Printing model information

To print information about model trunks, load LD 20 and enter the following commands on the TTY:

LD 20

REQ PRT

TYPE TTTT M "TTTT" = the trunk type

MODL YYY "YYY" = the model number. If you want to print all of the models for this trunk type, leave this value blank.

Changing a route access code

Use this procedure to change a route access code.

Procedure 47
Changing a route access code

1 **Lift the handset of the administration telephone.**

2 **Enter the administration Flexible Feature Code to access the administration menu.**

3 **Enter the default password for the administration telephone.**

You hear special dial tone and the prompt
"TASK?"
appears on the top line of the character display. If you press the asterisk, "2 CHANGE ROUTE ACCESS" appears on the second line of the character display.

4 **Select "2 CHANGE ROUTE ACCESS" by entering the number "2".**

The prompt
"ROUTE ACCESS?"
appears on the character display.

5 **Enter the access code of the route you want to modify, and press the pound key (#).**

The prompt
"NEW ACCESS CODE?"
asks you for a new access code for the route.

6 Enter the new access code and press the pound key.

The display shows
"CODE CHANGED".
After a delay of approximately four seconds, you hear special dial tone and the sequence repeats when the prompt
"ROUTE ACCESS?"
appears.

OR

If the route access code is not available for use, you hear overflow tone.

The display shows
"USED, ROUTE ACCESS?"
and you must repeat this step.
You must enter a **different** access code. This sequence continues until you enter an appropriate new access code.

7 Terminate the sequence by hanging up the telephone.

OR

Repeat the sequence by going through the steps again.

End of Procedure

Meridian 1

Option 11C Mini

Planning and Installation Guide

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